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MENSTRUATION AND MENSTRUAL DISORDERS

NEWER CONCEPTS *

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It is probably safe to say that more has been learned about the physiology of menstruation during the past twenty-five years or so than in as many centuries preceding. Much of this knowledge has been contributed, through correlated clinical and histologic studies, by gynecologists and obstetricians. It is only within recent years that anatomists and physiologists have taken vigorous hold of the problem. This is a refreshing sign, and the work of these laboratory investigators has already advanced our knowledge almost by a bound.

It is not necessary here to review the valuable contributions of Loeb, Evans, Allen and his co-workers, Corner, Frank and his associates, Hartman, Stockard, Papanicolaou and others in this field.

Suffice it to say that these investigations have thrown much light on our knowledge of the sexual cycle in many of the lower animals, and, indirectly, on the study of the corresponding human problem. It still remains a point for discussion, however, as to how far results of study in the lower animals can be applied in man. The answer to this question is rendered all the more important in that the results of work with animals have in some respects seemed to shake the opinions hitherto held by those of us who have been particularly interested in the study of menstruation in the human subject.

This applies especially to the now strongly urged view that the ovarian follicle is far more, and the corpus luteum far less, important in the mechanism of menstruation than most of us had previously believed. The "follicle trend," moreover, has been applied by some in an all too unqualified way to the therapeutic field, and the danger of setting off on another false therapeutic trail would seem to make it worth while to examine closely such scientific sign boards as are now available.

As a basis for discussion, let us summarize the conception of menstruation that has prevailed among those who have studied this problem in the human being. It has been accepted by most of us, on the basis chiefly of correlated histologic and clinical studies, that ovulation is an essential precursor of menstruation, and that a definite relationship, chronological and otherwise, exists between the two processes. Ovulation is believed to occur usually at about the thirteenth or fourteenth day of the cycle. The ovum, after its discharge from the follicle, enters the tube and slowly makes its way toward the uterine cavity. In the meantime, the endometrium prepares for the reception of the ovum by undergoing a gradual developmental change, characterized by such changes as increasing thickness of the mucosa and increasing tortuosity of the glands.

A few days before the next menstrual period, this hypertrophic change becomes very marked, and to it is added evidence of definite secretory activity of the glandular epithelium (premenstrual, secretory or pregravid phase). In the event of fertilization of the ovum, this phase passes on by an easy transition into genuine decidua, in which case menstruation, of course, does not occur. If, on the other hand, the ovum is not fertilized before it reaches the end of its life span of approximately two weeks, the endometrium is dismantled, with casting off of tissue and bleeding, i. e., menstruation.

Synchronously with these endometrial changes there occurs a corresponding ovarian cycle. The corpus luteum resulting after the rupture of the follicle undergoes a steady development, and becomes mature a few days before the next menstrual period. In other words, during the secretory phase of the endometrium we may confidently expect to find in the ovary a mature corpus luteum. With the onset of menstruation the corpus luteum retrogresses, while in the case of pregnancy it advances to still greater development (corpus luteum of pregnancy).

These statements, while here set forth rather arbitrarily, are supported by a wealth of evidence, and every gynecologic pathologist will attest to their truth from his own daily observation. It has come, therefore, as something of a jolt to be told by our friends the anatomists and physiologists that the corpus luteum does not play an essential part in the sexual cycle, and that it is the hormone of the ovarian follicle which is all-important in this respect. This has been the conclusion drawn in almost all the recent laboratory studies in the lower animals which have been reported.

In the case of the lower animals which have been studied, it may be conceded that the follicle dominates the cycle, the corpus luteum becoming important only after the beginning of pregnancy. But the cycle of changes noted in these animals, especially in the endometrium, is quite different from that observed in women. For example, no such picture is encountered in these animals as one finds during the premenstrual or pregravid stage in women. During this phase the endometrium shows not only a marked hypertrophic change but also a totally new and distinctive feature in the definite secretory picture presented. At this

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period, a mature corpus luteum is constantly found in one or other of the ovaries. In such animals as mice, rats or rabbits, no corpus luteum is found, nor is there a type of endometrium which is histologically comparable with the human premenstrual stage just described.

The only exception to this statement appears to be in the case of some monkeys. These animals, as is well known, menstruate much as does the human female. Corner,[1] in an important contribution in 1922, called attention to the fact that, in a large proportion of the monkeys he had studied, no corpus luteum could be found in the ovaries of animals killed just after the onset of menstrual bleeding. This would certainly speak against the importance of the corpus luteum in the production of menstruation, and would seem to justify the suggestion made by Corner that perhaps ovulation is not an essential precursor of menstruation. Similar observations have been made by Allen [2] and by Hartman.[3] But in animals in this category, so far as I have been able to learn, the endometrial cycle is characterized by an absence of a secretory stage which can be compared with that in the human being.

In some monkeys, however, perfectly typical mature corpora lutea have been found at the onset of menstrual bleeding, and in these cases the endometrial response is exactly similar to that observed in women. This applies not only to the premenstrual phase but also to that of menstrual bleeding itself. In other words, in those animals in which the menstrual cycle in the endometrium was similar to that seen in women, the ovarian cycle was likewise similar, the corpus luteum apparently playing a very definite rôle.

On the basis of such observations, it would seem that the studies which have thus far been made, both in the lower animals and in the human subject, suggest that an evolutionary gradation has been demonstrated in the sexual cycle of these animals, much as with the other body functions. In most of the lower animals that have been studied, the dominating ovarian factor is apparently the follicle. The same type of cycle is encountered in many monkeys, but in others, possibly as a result of such factors as greater maturity or more favorable environment, an advance toward the human type is noted. In women, finally, the prevalent type of cycle is that in which both follicle and corpus luteum play parts. Histologic evidence would indicate that the early developmental changes in the endometrium, up to the premenstrual phase, are produced by the influence of the maturing follicle. This may be taken over by the early corpus luteum, if one may judge from histologic evidence and from experimental injections. But when the corpus luteum matures, it assumes a definite and apparently specific incretory function, producing a very distinctive reaction in the endometrium, as described, a reaction differing both quantitatively and qualitatively from the preceding phases.

There is other evidence for the view that the follicle can scarcely be all-important in the human menstrual cycle. This structure reaches its acme at about the thirteenth or fourteenth day of the twenty-eight day cycle, but at this time the endometrium presents a very low degree of development. Conversely, the follicle is at a low ebb just before menstruation, when the endometrial hypertrophy is at its maximum. Again, as I have elsewhere emphasized,[4] operating room observations indicate that the corpus luteum exercises a definite protective influence over the premenstrual endometrium. If a corpus luteum is removed several days before menstruation is due, the menstrual period is precipitated, occurring usually in from twelve to thirty-six hours of the operations. Such observations, which I have made repeatedly, can be controlled, so as to exclude such possible factors as the nervous upset of the operation. The corpus luteum, of course, has nothing to do with the actual bleeding of menstruation, contrary to a superficial view sometimes expressed. This structure is responsible for the final topping off of the hypertrophied mucosa, in preparation for the possible embedding of a fertilized ovum. If the fertilization does not occur and the ovum thrown forth from the ovary about two weeks previously reaches the end of its life span, the corpus luteum begins to retrogress and the endometrium involutes, with desquamation and bleeding; i. e., menstruation. It is only in this sense, according to the present conception, that the corpus luteum is concerned with menstruation.

While there is no doubt, on the basis of countless observations in many laboratories, that the corpus luteum cycle is at least chronologically related to the clinical and the endometrial cycle of menstruation, it is interesting to note that there is in human beings a type of menstrual, or at least "pseudomenstrual," bleeding in which corpora lutea are characteristically absent. I refer to the functional hemorrhage so often seen at the menopause and occasionally at puberty, but also not rare at other ages during reproductive life. It would seem that in some women there is, during periods of endocrine imbalance, a reversion to the more primitive animal type of cycle, in which the follicle plays the important part. This is indicated by a study of the ovarian and endometrial changes characteristic of this menstrual disturbance. Cases of this type, however, are the exception and not the rule.

From a teleologic standpoint, there is nothing surprising in the view that the corpus luteum plays an important part in the menstrual cycle. It is generally accepted that the true corpus luteum plays some part in early pregnancy, though just how much is uncertain. The endometrium of all women during reproductive life prepares each month for a possible pregnancy, through the prepregnancy or premenstrual alteration described. To use a figure of speech, it must get a flying start, and the same thing appears to be true of the corpus luteum of menstruation, which matures coincidentally with this predecidual development of the endometrium.

I believe that Papanicolaou [5] is correct in his statement that the follicular substance "is probably secreted by the undifferentiated theca or granulosa cells, while the specific luteal hormone is probably formed by the fully differentiated luteal cells, the latter increasing in number with the advancing differentiation and development of the corpus luteum."

I do not believe that the available evidence justifies Frank [6] and his co-workers in speaking of a "gestational

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gland," chiefly on the basis of a similar or at least synergistic action on the part of extracts from such different structures as the follicle, the corpus luteum and the placenta. While it may not have been the intention of these investigators to imply that only one substance is concerned in the production of the cycle, this is unquestionably the meaning which many have read into their work. The "female sex hormone" has been obtained from so many different sources that one is justified in questioning its specificity. For example, Loewe, Lange and Spohr,[7] in studies on castrated mice, found that several plants contain a substance capable of producing and stimulating the estrual cycle, while a similarly active substance has been found by Dohrn [8] in the testis.

It is true that direct results from injections of corpus luteum have been less striking than those following injections of follicle, but this is not surprising if the view is accepted that in the animals studied the corpus luteum probably plays a part subordinate to the follicle, and that injections of corpus luteum in the human being, aside from uncertainties in the preparations used, might be expected to have little effect unless the endometrium was first prepared by injections of follicle hormone as in life. Even so, there is enough evidence already available, in the work of such investigators as Loeb,[9] Papanicolaou,[5] and Smith,[10] to make one hesitate about dismissing the corpus luteum altogether from consideration, as seems to be the present tendency. These remarks, it need scarcely be said, have nothing to do with the importance of the follicle substance as a distinctly female hormone, for certainly we would not expect to find follicle substance in the male. The value of folliculin tests for such purposes as the determination of sex, as advocated by Frank and his associates, would seem to be a real one. The evidence for this is much more impressive than that for its dominating influence in the human cycle.

CONCLUSION

One incentive for the writing of this paper was to urge caution in the therapeutic application to human patients of the results recently obtained through studies in animals, valuable as these studies have been. My own results with folliculin therapy have left me doubtful of its efficacy, and this seems to have been the experience of others as well. Aside from such possible reasons as inadequacy of dosage, I believe that these poor results are due chiefly to such considerations as I have discussed in this paper. In cases of hypofunction of the ovary, particularly in amenorrhea, it would be surprising if follicle injections in themselves were successful in restoring menstruation. It is much more rational to mimic what we believe to be the normal sequence of events, and to give a series of injections of follicle substance, followed by a series of injections of lipoid-containing corpus luteum extract. My only encouraging results have been with this plan of treatment, which I believe to be far more rational than the injection of either follicle substance alone or corpus luteum extract alone. The details of this method of treatment, together with its limitations, I have discussed in another paper.

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DIFFERENTIAL DIAGNOSIS IN TUBERCULOSIS OF THE EYE*

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When Michel, in 1890, emphasized the significance of tuberculosis as an etiologic factor in diseases of the eye, he was literally ridiculed by his colleagues. Since then there has been a marked change of opinion, and, at the present time, it is well known that any tissue of the eye may become the seat of a tuberculous process.

Histologic evidence that has been gathered from the study of microscopic sections of eyes has proved that tuberculosis is frequently responsible for ocular inflammations. Research workers have also been able to produce in animals all the clinical manifestations of tuberculosis of the eye as it is seen in the human being, and have fully substantiated Michel's contention.

In many instances, obscure inflammations of the eye are of tuberculous origin, and they may tax one's resources to the utmost in making a diagnosis, and unless one has tuberculosis in mind, the cause may be overlooked. It is because I have received a number of eyes for microscopic examination in which an incorrect diagnosis had been made, and in which the pathologic changes were found to be of a tuberculous character, that I have selected this subject for discussion.

Tuberculosis of the eye is rarely a primary condition. I think it can safely be said that, with the exception of involvement of the conjunctiva and the cornea, and following perforating injuries, it is secondary to a focus elsewhere in the body. In the majority of cases, the primary focus is relatively inactive, and it is often impossible to locate it with our present methods of examination. The idea that prevails in some minds, that an active lesion must exist in the lungs before the eye can be involved, is erroneous. In my pathologic collection there are several eyes that show typical tuberculosis that were removed from persons in whom no physical signs or roentgen-ray evidence of the disease could be found elsewhere. It is for this reason that one must frequently rely on the clinical picture as it is manifested in the eye in order to make the diagnosis.

The general characteristics of uncontaminated tuberculosis in most tissues are chronicity, freedom from pain, and the tendency to produce yellowish avascular tubercles that break down into ulcers. The histologic structure of the invaded tissue determines the morphology of the lesion and its clinical appearance. For this reason, it is quite obvious that the clinical picture will differ with involvement of the various portions of the eye. Therefore, I shall consider the several ocular structures and adnexa separately.

THE ORBIT

Tuberculosis of the orbit offers many difficulties in diagnosis. The temporal margin and the zygoma are the most frequent sites. In the early stage there is marked induration and swelling over the rim of the orbit. Later, the abscess ruptures through the skin and leaves a characteristic fistulous opening. On probing, denuded and roughened bone is felt. Guinea-pigs inoculated with secretion taken from the fistula die from tuberculosis if that is the cause. It may be confused with syphilitic or other forms of osteomyelitis or periostitis in this region. Fistulous openings are not characteristic of syphilis.

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The ulcerative type is almost always confined to the primary lesion, and *Spirochaeta pallida* can easily be found in scrapings from the chancre. Secondary manifestations are exceedingly rare. Occasionally, a gumma becomes necrotic and leaves an ulcer. When this occurs the Wassermann reaction is positive, antisyphilitic treatment causes rapid improvement, and the diagnosis is thus established.

Multiple fistulas are characteristic of actinomycosis. Sulphur-like granules, which contain the ray fungus, are found in the secretion that escapes from them.

THE CONJUNCTIVA AND LIDS

Tuberculosis of the conjunctiva should offer little difficulty in differential diagnosis because of its characteristic clinical picture. It occurs in young persons; the course is essentially chronic, running over a period of months or even years; the patient does not complain of pain, and it is usually unilateral. The lid is thickened, and the preauricular lymph gland, and often the submaxillary and cervical glands, are enlarged on the affected side. When the eyelid is everted, a characteristic irregular, dirty gray ulcer, with scattered red loops of granulation protruding through the necrotic material in its base, is seen. The ulcer has a punched out, mouse-eaten border, and the surrounding conjunctiva and tarsus are often a lardy, yellowish red. The progress is slow, and the ulcer shows little disposition to heal. In advanced cases, the bulbar conjunctiva and cornea may be invaded, and the ulcer, which is usually confined to the tarsus, may perforate into the subcutaneous tissue or through the skin.

A positive diagnosis can be made easily by removing some of the tissue and introducing it into the peritoneal cavity of a guinea-pig, or by sectioning the tissue and staining for tubercle bacilli. The former is the most satisfactory method because of the difficulty and uncertainty in finding bacilli in tissues.

Parinaud's conjunctivitis presents a clinical picture that may be confused with tuberculosis. Parinaud's disease, however, is much more severe, and is ushered in with fever and other constitutional symptoms. Verhoeff described a filamentous leptothrix as the cause. This has not been confirmed by other observers, because—according to Verhoeff—of faulty technic in staining.

The ulcers of the conjunctiva described by Pascheff are usually multiple and are present in both lids. The condition is also accompanied by constitutional symptoms. Tularensis, or the so-called squirrel plague conjunctivitis, has symptoms similar to Pascheff's disease. A specific bacillus has been described as the cause. Its association with contaminated squirrels can usually be traced.

Blastomycosis and sporotrichosis have characteristic symptoms and typical micro-organisms, and, for this reason, should not be confused with tuberculosis.

Tuberculosis of the bulbar conjunctiva or of the fornices is rare. It is usually seen as a nodular swelling that varies in size from a millet seed to a pea. This nodule is yellow and may be multiple. Sections of tissue and animal inoculation are useful aids in diagnosis.

Lupus of the skin of the eyelids and conjunctiva is exceedingly rare in this country. It is quite prevalent in some parts of Europe. If encountered in the skin of the lids, nearly all the forms known to the dermatologist may be observed. It is usually secondary, extending to the lids from areas in the face. The diagnosis is usually made before the patient consults the ophthalmologist.

THE LACRIMAL APPARATUS

Tuberculosis of the lacrimal sac, according to Stock, occurs rather frequently. The diagnosis can be made only by histologic examination after operation. It is secondary to tuberculosis of the lid or nose in practically all instances.

THE CORNEA

Tuberculosis of the cornea is usually associated with tuberculosis of the uveal tract or sclera. It rarely involves the cornea alone. It occasionally occurs as a parenchymatous keratitis. Uhthoff found it in seven out of 163 cases in which he could determine the etiology of the keratitis. The appearance of the cornea in tuberculosis does not differ from that in syphilis because the histologic changes are much the same. The diagnosis hinges on the result that is obtained when tuberculin is used as a diagnostic or therapeutic agent.

Sclerosing keratitis is usually associated with chronic scleritis. If it occurs in young persons, it is often due to tuberculosis. The scleral involvement is the more conspicuous during the active process, and the corneal changes are a secondary manifestation. If it begins in older persons, the cause is usually something other than tuberculosis.

EPISCLERA AND SCLERA

Many observers assert that an overwhelming majority of the cases of episcleritis and scleritis are due to tuberculosis. I am inclined to question this. When it occurs in young persons and is extremely chronic in nature, associated with the formation of tubercles in the conjunctiva or episcleral tissue, it is almost certainly due to tuberculosis. In these cases tissue can be removed for biopsy or for injection into guinea-pigs, after which a positive diagnosis can be made.

In the recurring cases of diffuse episcleritis or scleritis, it is extremely difficult to make a differential diagnosis, and the etiology in many cases can never be found. The diagnosis must be made by exclusion. Tuberculin may be of some assistance, but its influence on the course of the disease is usually disappointing. While corneal involvement is of more frequent occurrence with tuberculosis of the sclera, still it is manifest in other forms of scleritis.

THE IRIS

Tuberculosis of the iris has a characteristic picture when it occurs in the nodular form. It must be differentiated from syphilis, sympathetic ophthalmia, ophthalmia nodosa, and malignant tumors. Miliary tubercles arise simultaneously in the iris in different locations. All zones, i. e., the base, middle zone and pupillary area, may be involved. The nodules usually resemble millet seed, and the blood vessels of the surrounding stroma are congested. In syphilis, only the basal and pupillary zones are affected. In tuberculosis, the nodules are more yellow than in syphilis, when they are more likely to have a pinkish hue. In the latter disease, marked improvement follows the administration of one of the arsenicals, mercury and iodides, and the Wassermann reaction is positive in a great majority of cases.

Sympathetic ophthalmia may exactly simulate the picture of tuberculosis, and the history will be the key to the differential diagnosis. Without a history of injury to the eye a differential diagnosis cannot be

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made because, with the exception of caseation and the presence of tubercle bacilli, the microscopic changes of the two conditions are exactly the same.

Large solitary tubercles may be confused with a gumma or malignant tumor. Tubercles of this type are usually yellow. The lesions are avascular, but blood vessels may pass over their surface. Gummas are more red and improve under antisyphilitic therapy. Malignant tumors are pigmented and are vascular and do not show any tendency toward improvement under hygienic measures and tuberculin. In children, exuberant growths on the surface of the iris or in the angle of the anterior chamber are sometimes seen in cases of retinoblastoma (glioma of the retina), and must not cause confusion. Their structure and color closely resemble tubercles.

Ophthalmia nodosa is exceedingly rare, and a caterpillar hair can usually be seen in the center of the nodule with a loupe or with the corneal microscope and slit lamp.

There is a form of chronic iridocyclitis, not accompanied by tuberculous nodules, which is due to tuberculosis. It is characterized by the usual symptoms of a severe chronic iritis due to other causes, in addition to large lardaceous (mutton fat) deposits on the posterior surface of the cornea. The whole of the posterior aspect of the cornea may be covered by them and the vision greatly reduced. The deposits are unpigmented and may vary in size. When the iris is visible, small gray nodules may be discovered at the pupillary margin with the corneal microscope. Koeppe believes that their presence is indicative of tuberculosis. They leave fine strands of connective tissue that run from the margin of the pupil to the anterior lens capsule and form firm posterior synechia. Secondary cataract is a frequent accompaniment of this form of the disease. If yellow corneal infiltrates occur during the inflammation, the disease is almost certainly of tuberculous origin. I have seen several such cases in which microscopic sections have verified the clinical diagnosis. The intra-ocular tension is usually diminished.

THE CHOROID

The active stage of a disseminated choroiditis is frequently located in the periphery of the eye and does not produce visual disturbance unless there is extension into the macular region. When studied with the ophthalmoscope one sees diffuse, irregular, grayish-yellow infiltrates, which have the appearance of washed edges. The vitreous is usually slightly turbid, although this feature is not so pronounced as it is in syphilis. This stage does not last long, and the picture soon changes to one of irregular, white patches of scar tissue that are bordered with pigment. The tuberculous form is usually more diffuse and irregular than other types of choroidal inflammations, although there are sometimes exceptions to this rule. Some writers assert that the only positive diagnostic sign is a focal reaction to tuberculin. In any event, it is difficult to make a positive diagnosis of tuberculosis in this variety of choroiditis.

Miliary tubercles of the choroid almost invariably occur at the terminal stage of a systemic tuberculosis. They are easily seen as slightly elevated, isolated, yellowish masses under the retinal vessels. Pigment changes do not occur until after the fourteenth day in the patients who live for that length of time. The accompanying active, general miliary tuberculosis makes the etiology clear.

THE RETINA

Retinal tuberculosis may be secondary to a choroidal process, or it may develop independently of demonstrable lesions in the uveal tract. Three types occur most commonly; viz., small miliary tubercles, conglobate, and tuberculosis of the retinal blood vessels.

The small miliary tubercles are seen most often in the macular region, and may be confused with the exudates of renal or other forms of retinitis. The latter can usually be eliminated by a general physical examination. The fundus lesions are more circumscribed than in renal and other forms of retinitis, and are located in the middle layers in the region of the finer retinal blood vessels. Solitary or conglobate tubercles may easily be mistaken for malignant tumors. The tubercle contains less pigment than most tumors. It is distinctly yellow and is usually surrounded by a halo of edema in the early stage and by pigment later. A focal reaction to tuberculin usually occurs. Frequently, anterior uveitis with deposits on the posterior surface of the cornea occurs early in the disease and suggests its inflammatory nature.

Retinal periphlebitis, especially when associated with recurrent hemorrhages into the retina and vitreous, was described by Axenfeld and Stock as a characteristic tuberculous condition. I believe that many of the cases are due to it. After a careful study of thirty-four cases, over a period of years, I have come to the conclusion that not all cases of recurrent hemorrhage into the retina and vitreous of young persons are due to tuberculosis. I believe that those with yellowish and gray exudates into the perivascular lymph spaces, especially of the veins, are tuberculous in character. In these cases, the exudates are first seen in the extreme periphery of the fundus and later appear in the posterior quadrant. They are seen most frequently where the lymph flow is retarded; i. e., at the points of crossing of the arteries over the veins and at the bifurcations of the veins. Recurrent hemorrhages without the exudates that have just been mentioned are not characteristic of tuberculosis and may be due to other causes. After 35 years of age, recurrent hemorrhages are usually due to some structural defect in the retinal vessels that result from renal or other diseases.

THE OPTIC NERVE

A tumor-like mass of yellow or yellowish-gray color on the papilla, either with or without blood vessels passing over its surface, is usually a tubercle. As sarcomas and other tumors are rare in this location, they can be excluded easily. In the early stage it may be difficult to differentiate them from papilledema. The yellowish color and nodular form are differential points. If the retrobulbar portion is involved, the spinal fluid may contain tubercle bacilli. Fortunately, tuberculosis of the optic nerve is extremely rare.

THE VALUE OF TUBERCULIN IN DIAGNOSIS

Most of us can remember when tuberculin was considered a specific diagnostic agent for tuberculosis of the eye. It was believed and taught that, if a focal reaction occurred at the site of a lesion, after the injection of tuberculin, it was positive proof that the lesion was tuberculous. Since A. Lowenstein, in 1918, observed severe local reactions after injecting milk, and Tobias, in 1922, found that pollen and casein gave focal reactions in tuberculous eyes, this faith in the specificity of tuberculin has been shaken somewhat. With their experiments in mind, it is reasonable to suppose that

lesions other than tuberculosis may react in a similar manner to the foreign protein tuberculin.

Further observation and research are needed to clarify this important question. If tuberculin does not produce a specific reaction, it is of little value as a diagnostic agent.

As to its value in treatment, to my mind it matters little, excepting from a purely scientific standpoint, whether the action is specific or not. I feel sure that it causes improvement in tuberculous lesions, and for that reason its use should be continued regardless of whether it acts as a foreign protein or stimulates the body to the production of specific antibodies.

I have always attached great importance to focal reactions—and by this I mean reactions in the lesions of the eye—and shall continue to think them of value until further observations prove otherwise.

We are taught that if, after the injection of tuberculin, a lesion in the eye becomes definitely more hyperemic, increasing in size, and an increase in the number of exudates and hemorrhages occurs, a focal reaction has taken place.

Local reactions that occur at the site of the injection are of no value in diagnosticating ocular tuberculosis. All that they suggest is that the individual has been rendered sensitive to the agent because of active or latent tuberculosis in some part of the body. A constitutional reaction has the same significance and proves little in regard to the eye. The Pirquet and intradermal reactions are of little value for the same reason.

A word of caution regarding the use of diagnostic tuberculin will be timely at this juncture. Tuberculin should never be used for diagnostic or therapeutic purposes until a thorough general physical examination has been made by a competent internist to determine whether active tuberculosis is present in some portion of the body.

It should always be borne in mind that under certain conditions tuberculin is an exceedingly dangerous drug. If it is injudiciously administered in cases of active tuberculosis, it might so aggravate the disease that marked dissemination would occur or a fatal issue result. For this reason, the patient's general condition should be carefully investigated by one who is thoroughly familiar with tuberculosis of the lungs and other parts of the body. If, after examination, the internist pronounces the patient free from clinical signs of tuberculosis, the ophthalmologist is justified in assuming the responsibility of the case and administering tuberculin. It is prudent, however, to have the patient examined from time to time, to be certain that no latent focus has been excited into renewed activity.

If active tuberculosis in the lungs or elsewhere is found, the ophthalmologist should require that the internist supervise the administration of the tuberculin. He should then satisfy himself with the observation and study of the ocular lesions. The determination of ocular reactions should be undertaken by the ophthalmologist.

The following is taken from a paper on tuberculin, which I read before the Academy of Ophthalmology and Otolaryngology at its last meeting:

Doses of 0.1 mg. of O. T. may be used for diagnostic purposes in lesions of the conjunctiva, cornea, sclera, iris, ciliary body, adnexa, and in some cases of tuberculosis of the optic nerve. Some prefer larger doses, and they may be used with caution. However, 0.1 mg. is usually a safe initial dose. In suspected tuberculosis of the retina in the macular region and of the retinal vessels, in addition to tuberculosis of the posterior segment of the choroid, the doses should be decidedly smaller. Some advise starting with from 0.000005 to 0.000025 mg. Diagnostic tuberculin injections are usually given at intervals of forty-eight hours.

When one is dealing with the anterior segment, the doses are given as follows: 0.1, 0.5, 1, 2 and 5 mg., and occasionally 10 mg. Most observers are content to exclude tuberculosis if no reaction occurs after 5 mg. has been injected.

For the cases in the danger zone, one must increase the tuberculin cautiously in the beginning, and if no reaction occurs, the dosage may be rapidly increased. Individualization and sound judgment are essential in these trying cases, and no definite rule of procedure can be stipulated with safety.

It is best to carry out tuberculin tests with the patient in the hospital, where he can be under constant observation and supervision, although this is not absolutely essential, provided the patient is intelligent and will cooperate. It is preferable to administer tuberculin in the morning, so that the temperature may be taken and recorded every four hours, and the eye examined at intervals of eight, twenty-four and forty-eight hours. If a general or focal reaction does not occur after forty-eight hours, a second dose should be administered and the same procedure repeated. This should be continued until the maximum dose is finally reached.

The appearance of focal reactions differs somewhat with the location of the ocular lesion. In keratitis, the reaction manifests itself by an increased cloudiness of the cornea, diminution in visual acuity, increase in the circumcorneal injection, lacrimation, photophobia and pain.

In scleritis, an increased congestion, induration and aggravation of subjective symptoms occur.

A reaction in iris tuberculosis would depend on the type of iritis. In diffuse tuberculous iritis, the circumcorneal injection is aggravated; the aqueous becomes more cloudy and the precipitates on the posterior surface of the cornea increase in number; the iris becomes more swollen; the vessels, when visible, become more engorged, and the pupil contracts. In addition to this, the subjective symptoms become aggravated. In the nodular type, the greatest change is in the size of the nodule and in the injection of the blood vessels that approach it. Circumcorneal injection and the other accompanying symptoms become aggravated also.

The ciliary body reacts in much the same manner as the iris. Visual acuity is often more disturbed than in cases of iritis, and secondary glaucoma is not an unusual accompaniment of the reaction.

Reactions in the retina and choroid are easily detected, provided the media are relatively clear. In the retina, reactions may be hazardous and may result in marked loss of vision or extensive hemorrhage. The visual loss may be permanent, and the hemorrhages are frequently replaced by dense bands of scar tissue in the vitreous and retina. Haziness of the vitreous and increase in the number and size of exudates are frequently seen.

Choroidal reactions are manifested by increased haziness of the vitreous, by increase in the size of the tubercle, and occasionally by detachment of the retina due to a sudden pouring out of exudate between the choroid and retina. Loss of visual acuity is also a prominent symptom.

Reactions in the optic nerve are manifested by increased haziness of the vitreous, increase in the size

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of the tubercle, and an aggravation of the hyperemia of the disk. In addition to these symptoms, the vision is diminished if it has not been destroyed previous to the time of the diagnostic test.

Old tuberculin, O. T., is preferred by most ophthalmologists for diagnostic purposes. There is some difference of opinion, however, regarding the size of the dose and the interval of time that should elapse between injections. Probably one of the reasons for the marked difference in opinion regarding the latter has been the failure to classify the cases and regulate the dose to the individual. The dose of tuberculin should vary in accordance with the type and character of the lesion. Doses that produce harmless reactions in the sclera would be fatal to the integrity of vision in tuberculosis of the retinal blood vessels. In certain types of retinal lesions, one should be content with a clinical diagnosis and not subject his patient to the danger of serious loss of vision.

The eye is an ideal location in which to study the effects of tuberculin on minute tuberculous foci, and the ophthalmologist is in a position to aid in either verifying or refuting the claims that have been made for tuberculin. By a systematic study and reporting of their observations in proved cases of tuberculosis, ophthalmologists should do much toward placing tuberculin on a scientific instead of a conjectural basis.

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THE PREVENTION AND TREATMENT OF CARBON TETRACHLORIDE INTOXICATION *

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In the last ten years great advances have been made in the treatment of hookworm disease. These have been due largely to two factors: the campaign carried out by the International Health Board of the Rockefeller Foundation, making it possible to treat very large numbers of cases and to study the best methods of treatment, and the discovery in 1921 by Dr. Maurice C. Hall [1] of the anthelmintic properties of carbon tetrachloride, which is relatively so harmless and so effective that it can be given to whole communities in which hookworm is prevalent, with the assurance that it will remove from 95 to 100 per cent of the hookworms harbored by infested individuals. On account of this certainty of action, it became unnecessary to reexamine the patients for hookworm after treatment, as had been the case previously. The increase in the number of persons treated by this new method was enormous. Where one or two men had been able to treat only a few hundred patients, on account of the time taken for examination, the number rose immediately to thousands, and in one or two instances to hundreds of thousands.

Shortly after the introduction of this drug in the treatment of hookworm disease, rare cases of poisoning occurred which have been investigated in this laboratory. The International Health Board has very kindly supported this work for several years and has given us case reports and other information from the millions of persons treated in all parts of the world. The following reports and clinical observations have been taken entirely from their records.

No attempt has been made here to give statistics of the cases treated or the number of intoxications. It may, however, be said that the number of fatalities from the use of carbon tetrachloride in hookworm disease has been extremely small. When the death rate in diseased persons is so low, one might wonder whether the deaths were not merely accidental. It is felt that this is not the case for two reasons: first, if the deaths from carbon tetrachloride, oil of chenopodium, thymol and betanaphthol are arranged in groups, it will be seen that each drug has caused a characteristic symptom-complex which would not be present if death were accidental; second, after analyzing the different types of death from carbon tetrachloride, we have been able to reproduce most of them in laboratory animals.

The early cases of intoxication were extremely puzzling, as they occurred in all parts of the world and at entirely unexpected times. One man treated 50,000 cases without accident and then had two deaths within a week. After this, many thousands more were treated without resultant symptoms. It was at first thought that the carbon tetrachloride used might be impure. This possibility was ruled out by supplying the field workers with extremely pure carbon tetrachloride made especially for this work. However, cases of intoxication occurred after the use of this drug about as frequently as with that obtained from different sources. The question of an overdose of carbon tetrachloride being a cause of these intoxications was then considered. It has been found that from 2.5 to 3 cc. is an adequate dose. Previously, on account of the relative ineffectiveness of carbon tetrachloride in the treatment of ancylostomiasis, much larger doses (from 10 to 15 cc.) were given to thousands of patients. These did not cause any more symptoms than the smaller dose and were no more effective. One case was reported in which a man took 40 cc. without any symptoms whatever. On the other hand, adults have died after taking 1.5 cc., and the administration of from 3 to 15 minims (0.18 to 0.92 cc.) has been fatal to children. It appears, then, that the dose of carbon tetrachloride has little to do with its toxicity.

EFFECT OF ALCOHOL ON THE TOXICITY OF CARBON TETRACHLORIDE

Shortly after the introduction of the drug as an anthelmintic, it became evident that carbon tetrachloride is extremely toxic both for chronic alcoholic addicts and for those who drank alcohol immediately after treatment. In such cases, vomiting comes on within a few hours after the administration of the drug. The signs and symptoms are extremely severe, vomiting is violent and continuous, and there are almost always hemorrhages into the gastro-intestinal tract, which cause the patient to vomit either bright or changed blood and to pass bloody stools. Jaundice may be very severe after forty-eight hours; the urine scanty and highly bile-stained. This clinical picture can be reproduced easily in dogs by giving alcohol with carbon tetrachloride. The possible explanation of these deaths will be given later under the heading, "Calcium as a Factor in Carbon Tetrachloride Intoxication." The following cases illustrate the effect of alcohol:

CASE 1.—A. E., a man, aged 25, drank much liquor the night before treatment. On the morning of January 14, he was given 2 cc. of carbon tetrachloride in a solution of 35 Gm.

* From the Department of Pharmacology, Vanderbilt University School of Medicine.

1. Hall, M. C.: Carbon Tetrachloride for the Removal of Parasitic Worms, Especially Hookworms, J. Agric. Research **21**: 157-175, 1921.

of magnesium sulphate. At 8 p. m. he began to vomit, and the abdomen became tender. The next day vomiting continued; albuminuria and later anuria developed. Vomiting continued, with occasional gastric hemorrhages. Jaundice developed, and the patient died, January 22.

CASE 2.—F. J., a woman, aged 35, a chronic alcoholic addict, had last taken alcohol two days before treatment. On the morning of treatment, 1.5 cc. of carbon tetrachloride, followed by magnesium sulphate, was given. Nausea and vomiting began almost at once. Both ascarids and hookworms were passed. The next seven days the nausea and vomiting continued; hepatic tenderness increased; jaundice appeared, and small local hemorrhages occurred. The patient vomited blood. Anuria developed two days before death, which occurred eight days after treatment. An autopsy was not obtained.

CASE 3.—A man, aged 25, a well developed European, took some whisky and soda shortly after medication with carbon tetrachloride. Three or four hours later he became violently ill; vomiting began, and continued at short intervals for seventy-two hours. He then gradually recovered.

ASCARIS AS A COMPLICATING FACTOR IN THE TREATMENT OF HOOKWORM DISEASE

In the case reports from several million persons treated with thymol, chenopodium and betanaphthol over a period of from eight to ten years, no mention was made of ascariasis as a complication in cases of intoxication. This may perhaps be due to the fact that in every region where ascariasis is prevalent, large numbers of ascarids are found to migrate in the body after death from any cause, and they are seen so commonly that no clinical importance is attached to their presence or activity in unusual parts of the host. With the introduction of carbon tetrachloride, it was extremely interesting to see the gradual development of the conviction that ascarids play some part in the intoxication. Dr. S. M. Lambert, who treated cases in the Fiji Islands, probably first sponsored this idea. He observed that symptoms were more common in districts in which patients were heavily infested. He later reported having been called to see several young children severely ill after taking carbon tetrachloride. Writhing masses of ascarids could be seen plainly through the abdominal wall. After a dose of chenopodium which caused the patients to pass these worms, all symptoms disappeared. Similar reports began to come in from different countries. Later, cases were described in which definite pharyngeal and intestinal obstruction were found at autopsy. Two cases have been reported by Watkins and Moss [2] of children to whom santonin had been given for ascariasis. These patients developed symptoms of intestinal obstruction. At operation, large numbers of ascarids were removed from the intestine. Recovery was then immediate and uncomplicated. Carbon tetrachloride undoubtedly causes an increase in the activity of these roundworms. Persons in whom their presence has been unsuspected may vomit them or pass them through the nose after taking this drug. It has also been shown by Flury [3] that it is quite possible for these worms to cause a chemical intoxication.

The following cases illustrate these different types of death in ascariasis. One or two examples are cited of patients who have died suddenly after taking carbon tetrachloride and in whom large numbers of ascarids were found. The cause of death could not be ascertained, as no postmortem examination was made. Such deaths occurred too late to be connected with a sudden absorption of the drug and too quickly for the type of death described under the heading, "Calcium as a Factor in Carbon Tetrachloride Intoxication." It is suspected that they may have been due to sudden asphyxia from migrating roundworms, because several other individuals with very similar symptoms have been known to die from this cause.

CASE 4.—A girl, aged 6 years, was given 0.5 cc. of carbon tetrachloride, followed by 1 ounce of magnesium sulphate. The bowels moved and a few ascarids were passed. She was well and played about until the next noon, when she began to vomit and complained of pain in the liver region. Forty-eight hours after taking the drug, she still complained of pain and was vomiting ascaris worms. Seventy-two hours after, she was lying quiet, vomiting, and still complaining of pain in the same region. Ninety-six hours after, the patient went into coma. Vomitus was black. Death occurred after 132 hours. Autopsy showed a plug of coiled ascaris worms in the small intestine surrounded by a gangrenous area.

CASE 5.—A girl, aged 5 years, was given 5 minims (0.3 cc.) of carbon tetrachloride early in the morning followed by magnesium sulphate without result. She was perfectly well until noon of the next day, when she began to vomit. Three days after taking the carbon tetrachloride, she awoke at 2 a. m. shrieking and vomiting and remained in this state of "despondency and despair" until 6 in the morning, when she died. An incomplete postmortem examination showed the pharynx completely blocked by a plug of ascarids.

CASE 6.—A boy, aged 7 years, was given 5 minims (0.3 cc.) of carbon tetrachloride, followed by magnesium sulphate in the morning. He was perfectly well throughout the day and was left alone the next morning, playing about by himself. The mother returned at 2:30 p. m., and found the child lying down and unable to speak. He died one hour later. Autopsy showed the intestine "literally packed with ascarids." No mention was made of a pharyngeal examination.

THE RELATION OF FOOD TO CARBON TETRACHLORIDE INTOXICATION

It has been found [4] that when carbon tetrachloride reaches the brain in sufficiently high concentration, nervous symptoms are manifested. There are muscle spasms of the limbs, tremor of the head, and general signs of psychic disturbance. When carbon tetrachloride is given to animals by mouth, none of these symptoms normally occur, but when it is given by inhalation or by vein, they come on at once. It has been found, however, that if carbon tetrachloride is given orally after the animal has taken food, especially fatty food, symptoms appear as they do after inhalation. On this account it has been suggested that carbon tetrachloride always be given on an empty stomach and not be followed by the ingestion of fatty foods for a considerable period of time. A possible explanation of this intoxication is that the carbon tetrachloride is absorbed by the lymphatics and reaches the general circulation by way of the thoracic duct without passing through the liver, thus coming to the brain in higher concentration than when it is absorbed through the portal system. In the latter case, the liver takes out a considerable amount of the drug. Experiments are under way to determine whether the route of entry is a causative factor in this type of intoxication or whether lipemia in itself favors retention in the blood of carbon tetrachloride in concentrations sufficient to produce intoxi-

2. Watkins, T. H., and Moss, O. W.: Report of Two Cases of Intestinal Obstruction Caused by Roundworms Following Dosage by Santonin, J. A. M. A. **82**: 1442 (May 3) 1924.

3. Flury, F.: Zur Chemie und Toxikologie der Ascariden, Arch. f. exper. Path. u. Pharmakol. **67**: 275-338, 1912.

4. Lamson, P. D.; Gardner, G. H., and others: The Pharmacology and Toxicology of Carbon Tetrachloride, J. Pharmacol. & Exper. Therap. **22**: 215-288 (Nov.) 1923.

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cation. The following case illustrates, we believe, intoxication due to the taking of carbon tetrachloride after a heavy meal:

CASE 7.—A woman, aged 26, was found to have hookworm disease and was advised to take carbon tetrachloride in the morning on an empty stomach. In spite of this, she took 60 minims (3.7 cc.) at 7:30 p. m. after a hearty evening meal. Thirty minutes later she vomited, and at 10 p. m. had rigors accompanied by nervous symptoms such as restlessness, jerkiness of the arms and head, and intermittent convulsions of the neck and both arms. She later became drowsy and prostrated. The next day she vomited, and remained prostrated and weak. Two days later she appeared much better. Jaundice developed and the urine contained bile. On the third day the jaundice began to disappear, and the urine cleared up. Eight days after treatment, recovery seemed complete.

CALCIUM AS A FACTOR IN CARBON TETRACHLORIDE INTOXICATION

Besides the deaths in alcoholic addicts, in patients heavily infested with ascarids, and in those who have taken the drug with food, there still remains a considerable number which cannot be accounted for in any of these ways. Most of these have occurred in children, and the doses given were so small that they seemed at first insufficient to cause death. Autopsy showed, however, the central necrosis characteristic of carbon tetrachloride poisoning. Analysis of these case histories shows that there is a considerable latent period before the onset of symptoms, from twenty-four to thirty-six hours being passed in relative comfort. Nausea and vomiting, which is at times perfectly uncontrollable, then begin. The patient may gradually become unconscious and have convulsions toward the end. Some persons develop marked jaundice and excrete a small quantity of highly bile-stained urine; others vomit and may have more or less severe gastrointestinal hemorrhages. This may occur after carbon tetrachloride has been given, alone or with oil of chenopodium, to persons with or without ascaris infestation, or to alcoholic addicts. In the latter, apparently the only difference is the greater severity of the symptoms. Case 8 is illustrative of this type of intoxication:

CASE 8 (Reported by Phelps and Hu[5]).—A well nourished negro girl, aged 5½ years, was given 1 cc. of carbon tetrachloride followed by magnesium sulphate. The bowels moved several times and no round worms were noted. About forty hours after the dose she became delirious and vomited bile-stained material. Breathing was labored, and clonic convulsions grew progressively worse until she died twenty-four hour later. Autopsy showed marked necrosis of the liver and small local hemorrhages in the kidneys and gastrointestinal tract. The tissues were jaundiced.

For several years at the Johns Hopkins University School of Medicine, it had been found impossible to simulate these uncomplicated cases of carbon tetrachloride poisoning. Carbon tetrachloride could be administered to dogs in enormous amounts (250 cc.) without producing more than trifling symptoms. When the work was transferred to this department, the animals at first showed the same tolerance to this drug, but later almost all dogs died regardless of the quantity of carbon tetrachloride given. For the first time, it became possible to observe uncomplicated deaths from carbon tetrachloride in animals. The symptoms very closely resembled those seen in the uncomplicated deaths of patients. After a latent period of from twenty to thirty-six hours, the animals began to vomit all food and became gradually comatose. Some developed a fine tremor beginning in the toes and lips and increasing in severity, until the entire musculature was involved in tetanic convulsions. Frequently gastric or intestinal hemorrhages occurred, and the animals died in about from forty-eight to seventy-two hours after the administration of carbon tetrachloride. Of the many functional tests carried out on these animals, the one which showed changes most nearly proportional to the severity of these symptoms was the determination of bilirubin in the blood. After a latent period of approximately fifteen to twenty hours, bilirubinemia gradually developed, reaching an intensity many times greater than that seen in the earlier dogs which did not show symptoms. With the onset of vomiting, the urine decreased in amount and became highly colored with bile. Jaundice, though not always apparent, was often severe if alcohol had also been given.

The similarity of the tremors and convulsive seizures observed in these cases to those of infantile tetany suggested to one of us[6] a disturbance of calcium metabolism in these animals. On investigation, it was found that without our knowledge the diet of stock animals had been changed from mixed scraps from the hospital kitchen to one of lean meat without bones. Such a diet was extremely low in calcium compared with that previously given. As soon as calcium carbonate or calcium lactate was added to this lean-meat diet, the animals showed the same tolerance to the drug as was found in the early work in Baltimore. After conclusively proving that the tolerance or susceptibility of dogs to carbon tetrachloride is directly dependent on the calcium content of their diet, it was shown that intoxication from calcium deficiency could be relieved at almost any stage by proper calcium therapy. Animals in a comatose state, unable to stand and having general convulsions, could be brought out of this condition in from ten to twenty minutes by the intravenous injection of calcium chloride. The symptoms then disappeared, and the animals would get up and walk about the laboratory in a fairly normal condition until a recurrence of these toxic symptoms made further calcium therapy necessary. These attacks would become gradually less numerous, finally disappearing, and the animals would return to normal. By beginning treatment earlier, the same result was obtained in a less dangerous manner by furnishing calcium directly by the oral administration of calcium chloride, or indirectly by the oral administration of ammonium chloride or hydrochloric acid, or finally by the subcutaneous injection of parathyroid extract.

Accurate methods for the determination of ionized calcium in the blood are not yet available, and sufficient time has not elapsed for a complete analysis of the part played by calcium in these intoxications. Sufficient data have been accumulated, however, to allow the formulation of an hypothesis that may be of help in the rational treatment of human cases of intoxication. Carbon tetrachloride causes an acute central necrosis of the liver with an increase of bilirubin in the blood. It is well known that bile pigments are precipitated by calcium in vitro, and it has been shown that such a combination between bile pigments and calcium occurs within the organism.[7] Though the calcium may not be actually precipitated and removed from the blood,

5. Phelps, B. M., and Hu, C. H.: Carbon Tetrachloride Poisoning: A Report of Two Fatal Cases and a Series of Animal Experiments, J. A. M. A. **82**: 1254-1256 (April 19) 1924.

6. Minot, A. S.: The Relation of Calcium to the Toxicity of Carbon Tetrachloride in Dogs, Proc. Soc. Exper. Biol. & Med. **24**: 617-620, 1927.

7. King, J. H., and Stewart, H. A.: The Effect of the Injection of Bile on the Circulation, J. Exper. Med. **11**: 673, 1909.

it probably enters into a complex un-ionized molecule with the bilirubin. Thus, although the total calcium content of the blood may be normal or even high, the active or ionized calcium may be decreased in the presence of increased amounts of biliary constituents. In a poorly nourished animal whose calcium reserve has become low, the cholemia caused by the giving of carbon tetrachloride may decrease the amount of ionized calcium below the necessary level, and thus cause acute symptoms of calcium ion lack, such as characteristic tetany, tremors, convulsions and a great tendency toward hemorrhage. When calcium ions are furnished by any of the methods mentioned, the symptoms disappear, but recur as these ions combine with bilirubin or other biliary constituents.

Alcohol given with carbon tetrachloride causes a marked increase in all these symptoms, as has been stated. Just why the alcohol causes this increased toxicity is not yet understood. Whether carbon tetrachloride is absorbed much more rapidly when given with alcohol, or whether its harmful action is due to a greater penetration of the drug into the liver cells or to a higher concentration in the blood, has not yet been determined. In any case it has been shown by experiment that the liver lesions are more extensive and that the degree of bilirubinemia may be from eight to ten times as great as when carbon tetrachloride alone is given. This necessarily puts a much greater demand on the calcium reserve. It also apparently causes a much greater congestion in the liver with a backing up in the tributary veins, which tremendously increases the tendency to gastric or intestinal hemorrhage. In one case, a dog in apparently fair condition collapsed suddenly. An immediate autopsy showed that the liver had ruptured and the abdomen was full of fresh blood. With this congestion and consequent obstruction of the circulation, together with an almost total lack of fibrinogen in the blood,[8] it is not surprising that hemorrhages are at times uncontrollable.

With this picture of calcium deficiency as the predisposing cause of carbon tetrachloride intoxication in mind, we have reviewed the hitherto unclassified cases of intoxication. Although many of these are not described completely enough to allow definite conclusions to be drawn as to the cause of death, many cases are found in which one would suspect calcium lack. In the first place, the case reports indicate that it is very generally recognized that carbon tetrachloride is more dangerous for young malnourished children. By far the greater number of deaths have occurred in children, in whom it is well known that the calcium need is far greater than in adults. The conditions described by Kouwenar in Klingalese coolies[9] who were in an extreme state of malnutrition and showed so many symptoms after treatment with carbon tetrachloride that finally they were refused treatment as a class, as well as the following cases, are striking examples of the possible effect of malnutrition.

CASE 9.—A girl, aged 16, came to the hospital and was operated on for appendicitis, July 4. From July 4 to July 7 she was given a liquid diet consisting chiefly of orange juice. July 7, at noon, she received 5 cc. of carbon tetrachloride, and at 8 p. m. magnesium sulphate. This was followed by gastric distress and vomiting. July 8, she appeared markedly jaundiced and went into coma. July 9, jaundice became extremely marked and the patient died. Autopsy showed acute yellow atrophy of the liver and very marked jaundice.

The following case illustrates how alcohol intensified without materially changing these symptoms:

CASE 10.—A typical chronic alcoholic male addict, aged 35, who had had attacks of delirium tremens, took one-half pint of whisky just before and after treatment.

June 16, he was given 1.4 cc. of carbon tetrachloride and oil of chenopodium in the proportion of 4:1. (Although this patient had oil of chenopodium this does not disturb the picture of carbon tetrachloride poisoning, as will be shown later.) He went to work but was seized one-half hour later with violent vomiting which became continuous. In the evening, the patient began to have blood in the vomitus and stools.

June 18, the symptoms continued and patient became delirious. Convulsions began in from three to four hours. Anuria was present; the abdomen was distended; the stools were bloody, and a black and coagulated fluid flowed from the mouth at times. From June 20 to 26, the delirium became more marked, and hemorrhages were less frequent. Anuria was absolute. The patient became comatose, and subcutaneous hemorrhages occurred. June 28, he died.

Regardless of the known previous history in these cases, the similarity of the symptoms to those in dogs on a diet deficient in calcium is very striking. Besides this, the increase of all symptoms in alcoholic addicts is also of interest. On account of this similarity of human intoxication to that in our animals, and the fact that it is known that carbon tetrachloride produces in man the same liver lesions and the bilirubinemia observed in animals, it would seem that patients with a low calcium balance should show this symptom complex of calcium ion lack. These cases appear to illustrate this type of intoxication.

PREVENTION AND TREATMENT OF CARBON TETRACHLORIDE INTOXICATION

Ascaris.—Carbon tetrachloride given alone to persons heavily infested with ascarids may cause severe symptoms as a result of the increased activity of the worms. Respiratory and intestinal obstruction have been observed. The removal of roundworms with chenopodium several days before the administration of carbon tetrachloride lessens this danger. Even if smaller doses of the two drugs are given together, neither the danger from carbon tetrachloride itself nor its effect on these worms is avoided.

Alcohol and Food.—Chronic alcoholic addicts should be refused treatment with carbon tetrachloride. The taking of alcohol or food with or for several hours before or after the administration of the drug should be avoided.

Calcium Lack.—(*a*) Prevention: Since toxic symptoms occur very seldom and then as a rule only in poorly nourished individuals, it seems safe to assume that most normal adults and children have a sufficient calcium reserve to withstand anthelmintic doses of carbon tetrachloride. As a routine procedure, a calcium reserve should be built up in poorly nourished children before treatment. Where either whole or skimmed milk is available, the total daily adult requirement of calcium (0.6 Gm. of calcium or 1 Gm. of calcium oxide)[10] can be furnished by adding to the diet about 1 quart of milk. In the absence of milk, the same result may be obtained by feeding various calcium salts. Calcium lactate, carbonate (chalk) or chloride are all

8. Schultz, E. W., and Marx, A.: Studies on the Toxicity of Carbon Tetrachloride, Am. J. Trop. Med. **4**: 469 (Sept.) 1924. Lamson, P. D., and Wing, R.: Blood Fibrin and Levulose Tolerance in Acute and Chronic Carbon Tetrachloride Intoxication, J. Pharmacol. & Exper. Therap. **28**: 399-408 (Sept.) 1926.

9. Kouwenar, D. W.: Carbon Tetrachloride as a Hookworm Remedy, Geneesk. Tijdschr. v. Nederlandsch-Indie **65**: 646-657, 1925.

10. Sherman, H. C.: Chemistry of Food and Nutrition, ed. 2, New York, Macmillan Company, 1920, p. 267.

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effective if retained by the patient. The lactate is least likely to cause gastric disturbance because it avoids the gas formation of the carbonate, and has a less disagreeable taste than the chloride. Administration of about 3 Gm. a day in divided doses for approximately one week before treatment should suffice to prevent development of the type of symptoms associated with calcium deficiency after ingestion of carbon tetrachloride.

(*b*) Diagnosis: Since the relation of a lack of calcium to carbon tetrachloride intoxication has been appreciated, no cases of intoxication from carbon tetrachloride have been reported. The signs and symptoms found in man cannot therefore be given. Our experiments with animals, the well known cases of calcium need in children, and the cases of carbon tetrachloride intoxication already reported, however, all make it probable that the general symptom complex is the same in man and in laboratory animals. Depression and vomiting are the first signs to appear; the vomitus may be blood tinged, and gastro-intestinal hemorrhages may occur. Fine tremors, which may develop into general clonic convulsions, are common. The typical death is one of exhaustion or hemorrhage. Jaundice may or may not be apparent, but in our experience the cause of this intoxication is best indicated by the degree of bilirubinemia, which can easily be determined by looking at the blood serum. If serum cannot be obtained, the amount of bile pigments in the urine may be used as an index of intoxication.

(*c*) Treatment: The use of intravenous injections of calcium chloride is too dangerous to be justified except in moribund patients. The administration of calcium chloride by mouth, if it can be retained, is the most rapid and effective method of increasing the quantity of available calcium ions in the blood. Calcium is furnished both directly by absorption and indirectly by the liberation of ionized calcium from the skeletal reserves by the acid formed in the blood as the result of the more rapid absorption of the chloride ions. Thus Gamble [11] has shown that 1 Gm. of calcium chloride furnishes acid equivalent to 75 cc. of tenth-normal hydrochloric acid. Ammonium chloride or hydrochloric acid given orally is also effective in making stored calcium available. If excessive nausea is not produced, any of these drugs can be given in frequently repeated doses until relief from symptoms is obtained, or until signs of air hunger give warning that an undesirable degree of acidosis is being produced.

Parathyroid extract, as a means of raising blood calcium, has many advantages and has been used very successfully in intoxication in this laboratory. As it is given subcutaneously, it is effective when other drugs cannot be retained. Doses are given at intervals of several hours, and its prolonged action makes constant attendance unnecessary. This is of importance, as the intoxication may last several days. Since the effect appears only after from six to eight hours, an acute case demands additional calcium treatment.

(*d*) Precautions: There are two dangers in this calcium therapy, hypercalcemia and acidosis. The first may occur from excessive parathyroid administration or from an overdose of intravenous calcium. A relatively small intravenous dose may be fatal in persons without calcium lack. The second is less dangerous, as air hunger gives ample warning that the acid-producing drugs should be discontinued.

We wish to point out that calcium therapy has not yet been tried in the field, but the fact that carbon tetrachloride is known to cause a central necrosis of the liver and bilirubinemia in man as well as in animals makes it logical to expect that in human intoxication the reaction between bile constituents and calcium ions will be the same as that in our laboratory animals, and that consequently there will be the same need and response to calcium therapy. In certain countries, such as Porto Rico and Mexico, administration of the drug to whole communities has produced marked symptoms, but no more deaths than in other localities. It is felt that on account of the dietary use of alcohol by these people, their reaction to carbon tetrachloride should theoretically be greater and the prophylactic use of calcium in such communities would be indicated.

The following method of administering carbon tetrachloride has been found very satisfactory:

The patient may eat the usual evening meal the night before treatment. The treatment is begun the following morning at 7 o'clock, on a fasting stomach.

At 7 a. m., give 3 cc. (adult dose) of carbon tetrachloride in freshly prepared, hard gelatin capsules. The dosage for children follows Young's rule.

At 9 a. m., give 30 Gm. of magnesium sulphate (sodium sulphate may be used), dissolved in 250 cc. of water.

At 12 noon, a light lunch of broth, bread and coffee may be taken.

The special precautions outlined for the treatment of alcoholic addicts, undernourished individuals, and patients with ascariasis should be kept in mind.

CONCLUSIONS

1. Carbon tetrachloride has been found in practice to remove from 95 to 100 per cent of the worms in patients infested with hookworm (*Necator americanus*). It is somewhat less effective with *Ancylostoma duodenale*.

2. Doses of from 2.5 to 3 cc. in adults have been found to be as effective as larger doses.

3. Intoxication from carbon tetrachloride has been shown to be due to the following complications:

(*a*) Irritation or mechanical obstruction by ascarids.

(*b*) Chronic or acute alcoholism.

(*c*) The presence of undigested food in the intestinal tract, and

(*d*) Calcium deficiency.

4. When both the calcium ion and fibrinogen content of the blood are low, intestinal hemorrhages may be uncontrollable.

5. Intoxication can probably be prevented by:

(*a*) Avoiding the administration of carbon tetrachloride to patients with ascariasis without preliminary treatment for roundworms.

(*b*) Refusing treatment to alcoholic addicts.

(*c*) Having the patient avoid alcohol or food shortly before or after carbon tetrachloride administration.

(*d*) Insuring an adequate calcium reserve in all persons treated.

6. Cases of intoxication due to lack of calcium in dogs have been successfully treated by proper calcium therapy. Theoretically, there should be the same response in man.

7. A review of the reports by the International Health Board of the use of carbon tetrachloride in hookworm disease shows that most cases of intoxication fall into the groups, as here described, which are either preventable or susceptible of treatment.

11. Gamble, J. L.; Ross, G. S., and Tisdall, F. F.: Studies of Tetany: I. The Effect of Calcium Chloride Ingestion on the Acid-Base Metabolism of Infants, Am. J. Dis. Child. **25**: 455 (June) 1923.

PRINCIPLES GOVERNING THE LOCAL TREATMENT OF CARCINOMA OF THE BLADDER *

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Bladder tumors are interesting only as they are malignant. What, then, is meant by "malignant"?

In the broadest sense, malignancy is that characteristic in a tumor which makes it threaten life unless it is destroyed or excised. The pathologist finds that certain cellular characteristics are associated with varying degrees of malignancy, and he has taught us to appeal to him for a decision as to whether a tumor is benign or malignant, and, if the latter, as to its degree of malignancy.

But malignancy is also a clinical condition, and therefore its diagnosis may not be wholly relegated to the laboratory. There is a clinical malignancy the degrees of which do not run quite parallel to those of cellular malignancy. It is true that some tumors are so excessively malignant that clinic and laboratory find no difficulty in agreeing about them. The melanoma is perhaps the most characteristic of these. It is utterly malignant, whether treated or untreated. This is not so true, however, of the most malignant tumor with which the urologist has to deal; viz., the malignant teratoma of the testis. Ten years ago it was almost as utterly malignant as the melanoma. Today, the combination of radiation and operative therapy has cut its clinical malignancy almost in half.

The malignancy of the tumors of the stomach and intestines may be considered from another point of view. These are clinically excessively malignant, not because they grow with the terrifying rapidity of the melanoma or the seminoma, but because they are relatively inaccessible to early diagnosis. They often have time to grow beyond control before diagnosis is practicable. Were tumors of the same cellular characteristics to occur on the surface of the body, they would show a far lower degree of clinical malignancy.

Hence, it seems not unfair to argue for a double standard of malignancy, i. e., cellular malignancy, which determines what the tumor would do if it were not treated at all, and clinical malignancy, or the amenability of the tumor to treatment.

The clinical malignancy of bladder tumors has been rapidly diminishing through the last twenty years.

Though not of cellular malignancy, bladder papillomas were slowly yet inevitably death-dealing (and therefore clinically malignant) until Nitze provided the instrument whereby they might be seen, and Beer the treatment whereby they might be cured. Today they have passed from grave clinical malignancy into a clinical benignancy compatible with the claims of the pathologist. We no longer moan with Guyon, "We await in the clinic the papilloma of statistics." In the last ten years, only one of my patients with papilloma has died of that disease or of my attempt to cure him, and I hope not to lose another.

All other epithelial tumors of the bladder are still classified as malignant. Yet a stage of therapeutic efficiency is being reached wherein the favorite urologic methods of treatment are more and more successful year by year. The specter of malignancy is fading, as far as bladder tumors are concerned.

But although today the clinical malignancy of the more superficial and localized malignant bladder tumors is far less than was that of the papillomas twenty years ago, they are not as yet wholly conquered, and their kin, the infiltrating growths, are perhaps as malignant as they ever were. The next step in advance will unquestionably result from the tumor register now being established by the Urological Association, for until this register has begun to function, uniformity in the gross or microscopic diagnoses of the different varieties of epithelial tumors of the bladder cannot be expected. As a uniformly accepted pathologic nomenclature is lacking, the tumors may be grouped according to their gross characteristics as papillary carcinomas and infiltrating carcinomas, with the understanding that the distinction is by no means adequate, even as a gross description, for papillary tumors if neglected become palpably infiltrating, while infiltrating tumors of the most malignant type show little or no tendency to papillary protrusion into the bladder; they are ulcers from the start.

Now it seems not too idealistic at the present day to set down as the first requisite for a treatment of bladder tumors that it should control all papillary carcinomas that are attacked before they have infiltrated the bladder wall sufficiently to cause a visible and palpable solid infiltration. In order to achieve this ideal, the therapeutic attack must allow for the blindness of the operator. At the moment of the operation, there may be in the bladder a number of tumors so small as to escape observation, or new tumors may appear after a short interval.

When the tumors are so small and accessible that they may be destroyed cystoscopically, there is no difficulty in fulfilling this first requisite of successful bladder tumor surgery by repeated cystoscopic treatments. But if the bladder has to be opened, as is so commonly the case, prompt postoperative diagnosis of the progress of the case and prompt postoperative treatment (when this is required) can be assured only by suturing the bladder without drainage, or inverting the bladder wall about a small drainage tube, so that within a month the postoperative cystitis shall have sufficiently cleared to permit cystoscopy with a fair prospect of discovering (and proving by biopsy) persistence or recrudescence of tumor.

As a very practical corollary, one must add the requirement that the operation should be of such a character that the patient is willing to submit to it a second time, if the cystoscope shows a condition that cannot be controlled by cystoscopic treatment. (And as a further happy corollary, such an operation inevitably has a low mortality.)

A second principle in the attack on malignant bladder tumors is that the attack must be a confident one, i. e., with the expectation of cure, and should depend for the destruction of the tumor on one single therapeutic agent. One must decide what is the most powerful agent for the destruction of bladder tumors, and use it. Shotgun therapeutics should certainly not be employed.

This sounds practicable, yet it certainly does not represent the prevailing practice today. Indeed, up to a certain point it cannot. Thus, for example, one finds in the bladder, alongside relatively large infiltrating growths, others that may be conveniently destroyed by touching them with the fulgurating wire or the actual cautery. To this mixing of therapeutic measures there

* Read before the Section on Urology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

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can be no objection. But as each tumor is approached in turn, it should be primarily attacked by a single method, not by several. Thus, it seems unpractical to excise a tumor and then implant some radium seeds about its base. If the radium can do the trick, why excise? If not, why irradiate?

For a number of years, I have been chiefly interested in the effect of radium on bladder tumors, because repeated failure to eradicate tumors by seemingly com-

TABLE 1.—*Results with Implantation of Radium Seeds*

	Cases	Operation	Radium by Cystoscope	Operative Deaths	Cancer Deaths	Controlled	Resection after Radium
Papillomas	5	2	3	0	0	5	0
Borderline cases (doubtful malignancy)	5	4	1	0	0	4	0
Papillary carcinomas	13	11	2	1	0	5	1 (died)
Infiltrating carcinomas	9	9	0	0	4	0	0
Total	32	26	6	1	4	14	1

plete excision has established in my mind my inability to recognize how far from the tumor it is proper for the excision to extend. I have found that radium gives better results than surgery. I have not compared it clinically with diathermy. I am sure that radium is not an ideal agent for the control of infiltrating tumors; yet I do not know that excision is any better.

The method of implanting radium seeds 1 cm. apart, and of sewing the bladder without drainage, has already been described, and I need not repeat it here. My immediate results with this method are summarized in table 1 that they may be compared with others. The method has been employed for only two years; hence I do not yet know how permanent the results may be.

In table 1 the borderline cases were clinically malignant looking, microscopically doubtful. The infiltrating cases were palpably infiltrating. Four patients were operated on twice and two were operated on three times. There were thus thirty-five operations on twenty-six patients with one operative death. Cancer deaths occurred from four to fourteen months after operation. One other patient died of cardiac decompensation ten

TABLE 2.—*Ages at Time of Operation*

Age	Patients
40 to 49	5
50 to 59	8
60 to 69	8
70 to 79	4
82	1

months after cystoscopic radium application (borderline case). In one borderline case and in three cases of papillary carcinoma, radium was applied cystoscopically after operation. A case is considered controlled when cystoscopy shows complete absence of any tumor. Four cases of papillary carcinoma are unaccounted for in the table. Of these, three are believed controlled; one is not and death will probably result within the next year. Of the five patients with infiltrating carcinoma unaccounted for, I am not confident that any will survive.

The gravest objection to the use of radium is the subsequent bladder spasm due to radium burn. This was a very valid objection to the glass seeds. But metal seeds, by screening the beta rays and transmitting the gamma rays, minimize this objection. Seeds of 1.5 millicurie content (the dose I prefer today) do not burn the tissues perceptibly unless more than fifteen are used. I have several times implanted twenty such seeds without exciting postoperative spasms, and in one patient in whom I implanted thirty seeds, the red cell count and the hemoglobin content were spontaneously doubled in the month following operation, the patient suffering far less from the radium than he had from the tumor. On the other hand, one patient given twenty seeds containing 1.5 millicuries each had two weeks of hourly spasms, and one given ten of 2.5 content was comfortable for a month and then had a month of spasms.[1]

Reimplantation of a large number of seeds must, however, be done with discretion. One patient in whom the tumor was controlled by reimplantation of fifteen seeds of 1 millicurie each (three months after twenty such seeds had been implanted) had spasms for a month, and two who were given twenty on top of twenty at about a three months' interval suffered severely, though in neither case was the tumor controlled, and it was therefore impossible to distinguish radium from tumor irritation. In none of these cases, however, was health gravely impaired or life threatened by radium burn.

But even with the metal seeds, the permanent radium burn sets a definite limit to therapeutic efficiency. In the two patients just referred to, I exceeded this limit. Both were operated on three times.

REPORT OF CASES

CASE 1.—A man, aged 41, who had had symptoms fifteen months, presented a low growing papillary growth, with a base 3 by 2 cm. just behind and median to the right ureter. A biopsy disclosed papillary carcinoma.

Oct. 27, 1925, ten platinum seeds, 2.5 millicuries each, were implanted. A suprapubic tube was inserted, and the patient went home in three weeks.

Oct. 11, 1926, fifteen gold seeds, 1.5 millicuries each, were implanted and the wound was sutured without drainage. The patient went home in eleven days.

Jan. 8, 1927, five gold seeds, 1.5 millicuries each, were implanted cystoscopically.

February 2, twenty-five gold seeds, 1 millicurie each, were implanted suprapubically, and a tube inserted. The wound healed in three weeks, but severe spasms resulted and have continued. Before this last operation, there was a palpable induration above the prostate. This induration still persists.

CASE 2.—A man, aged 47, who had had symptoms eighteen months, presented a sloughing papillary growth over most of the right side of the bladder.

Feb. 8, 1924, the growth was burned away, and eighteen glass seeds, 0.5 millicurie each, were implanted, and two tubes, 28 millicuries each, of screened radon were left five hours in the bladder. The growth was found to be carcinoma.

July 8, 1925, there was a tumor in the vault the size of the last joint of the little finger. Three platinum seeds, 3 millicuries each, were implanted through the cystoscope.

July 18, the roentgen-ray examination did not show any seeds.

July 21, two platinum seeds, 3 millicuries each, were inserted cystoscopically.

July 30, the roentgen-ray examination did not show any seeds. (They probably all fell out.)

Jan. 6, 1926, fulguration was done.

January 22, fulguration was repeated. The tumor was very inaccessible.

January 27, one platinum seed, 2.5 millicuries, was inserted through the cystoscope. This seed was passed the next day.

February 2 and 3, four more fulgurations were done.

April 7, two platinum seeds, 2.5 millicuries each, were implanted cystoscopically.

1. When a patient with an infiltrating carcinoma of the bladder continues to suffer from this disease after irradiation, it is impossible to distinguish burn symptoms from tumor symptoms.

April 27, three gold seeds, 1.5 millicuries each, were implanted suprapubically. At the same time, a ventral hernia was repaired. The wound was sutured without drainage, and the patient went home in two weeks. Before he left the hospital, cystoscopic examination revealed three new very small tumors in the midfundus region. Four platinum seeds, 1 millicurie each, were implanted by means of the cystoscope.

November 2, all tumors were growing. Eleven gold seeds, 1.5 millicurie each, were implanted. The bladder was sutured without drainage, but the wound broke open. The patient went home in six weeks.

December 22, acute left pyelonephritis developed which lasted two weeks.

March 30, 1927, cystoscopic examination showed a slough 2 by 2 cm. in the midfundus. A biopsy disclosed papillary carcinoma.

May 6, the bladder was resected.

May 12, the patient died of ileus. Postmortem examination did not reveal any metastases. There was left pyonephrosis. Death was due to atonic ileus and angulation of the ileum at a point about 20 cm. from the ileocecal valve resulting from old adhesions.

The specimen removed showed carcinoma and an area of slough about 2 cm. in diameter with four seeds embedded in the underlying, much thickened bladder wall.

SUMMARY

1. The clinical malignancy of bladder tumors must be distinguished from their cellular malignancy.

2. Before the advent of the cystoscope and the high frequency current, bladder papillomas were clinically malignant. Now they are clinically as well as pathologically benign.

3. Today one may ask of a treatment for bladder tumors that it shall control papillary carcinomas as well.

4. In order to accomplish this, the treatment must permit bladder suture without drainage, so that tumors or portions of tumors that have been overlooked or not destroyed may be identified by cystoscopy and biopsy within a month after operation.

5. For the intelligent interpretation of operative results, it is also essential that a single therapeutic measure (knife, electric cautery or radium) shall be employed to destroy each tumor.

6. Radium seeds of metal, implanted through a cystoscope or by open operation and aided by fulguration or further cystoscopic or operative implantation, fulfil these indications.

7. Repeated implantation of numerous metal seeds, however, produces sloughs, and results in grave bladder spasms, just as the glass seeds used to do.

Need for Clinical Physiology.—A new clinical physiology is much to be desired—a physiology which deals with the symptoms of ill health and tries honestly to estimate the functional activity of every organ of the body. The more those apparently simple matters are investigated the greater will be the regret and astonishment to find so many gaps in our own knowledge. Mackenzie never tired of trying to drive that fact home. He took a delight in astonishing his visitors by such questions as the following: Why does cancer kill a man? What is it that kills him? Why does he die? At those times his conversation was fascinating and stimulating, but sometimes very puzzling and bewildering. It was necessary to admit that usually the questions he asked, although going to the very root of the matter and proving how ignorant we are of some of the most fundamental problems of life, are in the present state of our knowledge unanswerable. Doubtless, by the advance of science and the increase of knowledge, those problems will one day be solved, and I venture to predict that the family doctor will play an important part in their solution.—Ramsay, A. M.: *Brit. M. J.* **2**:1217 (Dec. 31) 1927.

END-RESULTS OF RADIUM REMOVAL OF CARCINOMA OF THE BLADDER *

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To determine the value of radium removal of carcinoma of the bladder, I have tabulated the end-results in cases in which five years had elapsed since irradiation; in other words, I am reporting all cases treated up to the end of 1922.

Only cases in which the carcinoma arose from the epithelial layer are listed. These are divided as accurately as possible into cases of papillary and of infiltrating carcinoma. In both the papillary and infiltrating types, some cases have been included in which a pathologic examination was not made or in which the pathologic examination did not, to my mind, reveal the real diagnosis.

In the papillary group, if the diagnosis of a small piece of the tumor showed simple papilloma, and if the tumor was sloughy in whole or in part, or did not disappear after the performance of repeated and intelligent fulgurations, that tumor was classified as papillary carcinoma. This classification may be the source of some slight error, as some papillomas are said to undergo ulceration.

The error, on the other hand, would be very considerable were sloughy papillary tumors to be classified as papilloma because the pathologic examination of a small piece removed showed papilloma.

In two specimens which I had removed with the cystoscopic forceps, the pathologist reported no tumor, while the third specimen was diagnosed epidermoid carcinoma. I had one case in which the bladder was filled with tumor masses, and the pathologic diagnosis was papilloma. Yet within one year, the patient died of a rapidly infiltrating carcinoma.

In taking pathologic specimens, I have been particularly adverse to digging deeply into the tumor base for the specimen. It is better to make a mistake in the diagnosis than to do anything that would tend to disseminate the tumor—all this to explain discrepancies between the pathologic diagnosis and the clinical diagnosis.

As far as the infiltrating type goes, if the pathologic examination of the specimen removed showed papillary carcinoma, and if palpation, either vaginally or rectally, or through the bladder opened at operation, indicated that the base of such a tumor was definitely hard and infiltrating, the tumor was classified as infiltrating. In quite a few of these cases, the subsequent death from metastases established the diagnosis.

The papillary tumor that infiltrates the bladder wall is probably not as malignant as the tumor which starts as a flat ulceration. We have, however, classified these two types as infiltrating carcinoma.

In the majority of both papillary and infiltrating carcinomas, the diagnosis has been borne out by the pathologic examination.

PAPILLARY CARCINOMA

There were twenty cases of papillary carcinoma reported, twelve of which were proved by pathologic

* From the Memorial Hospital.
* Read before the Section on Urology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

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examination. Fifteen (75 per cent) were cancer free. Of these twenty patients, one has been lost sight of (included under deaths). Two were well from two to three years, and were then lost track of; two were well from three to four years; one was well from four to five years; five were well from five to six years; two were well from six to seven years; two were well ten years, and one was well eleven years.

One patient died after operation from diabetic coma; two died at the end of two and three years, respectively, from carcinoma, and one died at the end of ten years, possibly from carcinoma.

INFILTRATING CARCINOMA

In fifty-one cases of infiltrating carcinoma, the pathologist's report agreed with the diagnosis in twenty-three cases. In sixteen cases, the diagnosis was carcinoma, without signs of infiltration, and in twelve cases either a pathologic examination was not made or the pathologic diagnosis was papilloma.

Eighteen cases (35 per cent) were carcinoma free as follows:

Five patients in whom the pathologic examination showed infiltrating carcinoma were well, two from three to four years; one from five to six years, and two from six to seven years.

Eight patients in whom the pathologic diagnosis was carcinoma were well, one from four to five years; five from five to six years; one from six to seven years, and one for eleven years.

Five patients in whom a pathologic diagnosis was not made were well, two from three to four years; one from four to five years; one from five to six years, and one for eleven years.

In one of these cases a small papilloma occurred at the end of five years; this is under control.

The deaths of patients who were free of carcinoma occurred as follows:

Two at the end of four years, one of apoplexy and one of cardionephritis; one at the end of five years of pneumonia, and two at the end of six years, one of kidney disease and one of apoplexy.

There was one operative death from uremia.

Thirty-two deaths occurred from carcinoma as follows:

One patient was lost track of, and is included in the first year deaths; sixteen died in the first year of carcinoma, and sixteen died at various periods, up to five years from the onset of carcinoma.

COMMENT

I have given percentages of cures, in both papillary and infiltrating carcinoma. I believe that this has only a relative value, as percentages of cures will vary with the kind of operation done, the form of radium used and the way it is used, the experience and skill of the operator, and the general run of cases which come to the service of any one surgeon.

It would make my paper entirely too long were I to attempt to classify the various sites of the tumors, and the size of their bases. That is included in the appended case histories of patients remaining well more than five years.

It is interesting to note that in the thirty-two patients who died of carcinoma, there was a pathologic diagnosis of papilloma or no pathologic diagnosis in seven, and in seven others the pathologic diagnosis was simply carcinoma, noninfiltrating. Notwithstanding this, these patients died of cancer, which had infiltrated the bladder wall, and in most of them metastases occurred before death.

To summarize, there were twenty patients with papillary carcinoma, fifteen of whom, or 75 per cent, were cancer free for as long as observed, eleven having remained so for more than five years. There were fifty-one patients with infiltrating carcinoma, eighteen of whom, or 35 per cent, were cancer free, twelve having remained so more than five years.

In this list of reported cases are included all those in which the carcinoma has been small enough to be controlled intravesically, and all cases in which suprapubic operation has been performed and radium implanted. In this last class, no patients have been refused operation if the carcinoma was thought to be confined to the bladder. Many of the infiltrating cases have been very extensive, and most of them have involved the bladder base.

Radium in all forms has been used. Beginning in 1915, blindly and very experimentally, I applied radium by means of tubes left in the bladder, then more accurately in cystoscopic applicators and in bare glass seeds implanted in the tumor by the cystoscope.

In 1919, I applied radium seeds through the open bladder for the first time. Not until the fall of 1925 did I first begin to use gold seeds. In none of these reported cases have I used gold seeds.

With the advent of gold seeds, the effectiveness of radium in controlling the bladder growths has decidedly increased, and future results ought to improve.

TABLE 1.—*Favorable Results in Papillary Carcinoma of the Bladder over an Interval of Five Years*

Name	Age	Pathologic Diagnosis	Induration	Slough	Size Base	Location	Time Well
C. A. C.	69	Carcinoma	0	+	3 × 3 cm.	Over left ureter	11 years
I. H. P.	63	0	0	+	Multiple	Bladder neck	9 years
H. F. R.	68	Papillary carcinoma	0	+	Extensive	Right bladder neck	9 years
J. B. W.	55	Papillary carcinoma	0	+	2.5 × 2.5 cm.	Left lateral wall	6 years
F. H. W.	55	Solid papilloma	0	+	3.5 × 3.5 cm.	Over left ureter	6 years
G. H. D.	76	Epithelial papilloma	0	+	2 × 2 cm.	Near sphincter	6 years
W. L. R.	70	Papilloma	0	+	2.5 × 3 cm.	Left bladder base	5 years; death, pneumonia
A. V.	45	0	0	+	3 × 2.5 cm.	Near left ureter	6 years
J. B.	63	Papilloma	0	+	1 × 4 cm.	Trigon	5 years
J. B. H.	53	Papillary carcinoma	0	+	3 × 3 cm.	Near left ureter	5 years
C. M.	63	Papillary carcinoma	0	0	3 × 3 cm. and 2 × 1 cm. and one 4 × 4 cm.	Base and involving the urethra	5 years

To determine the mortality of the suprapubic implantation of radium, I have tabulated the results of operations done up to the year 1927 in my own cases, as I believe that the operations performed by one operator, in one way, will give a true record of what can be done in a given series.

In all, ninety-four suprapubic operations have been done in ninety cases. Two of these patients were operated on twice, and one patient, three times. The patient operated on three times is cancer free, and it is now seven years since the first operation; the other two are dead. These operations are divided as follows: papilloma, five operations; papillary carcinoma, ten operations; infiltrating carcinoma, seventy-nine operations.

Three deaths occurred after operation had been performed. One patient with a papilloma, who had bled for weeks prior to operation, died three days afterward from hemorrhage. Another patient who had papillary carcinoma died in diabetic coma, three months after operation. This patient had had 5 per cent sugar in the urine before operation.

The third death resulted from uremia, two weeks after operation, in a patient with infiltrating carcinoma. In this patient, the blood urea nitrogen was 42 mg. before operation; this rose to 120 mg. two days before death.

In the ninety-four suprapubic implantations of radium, there was a mortality of slightly over 3 per cent. When this is compared with the mortality of between 10 and 20 per cent resulting from the operative removal of carcinoma of the bladder, it is realized that even if radium removal were not more effective than operative removal, one would, by using the former, spare a goodly number of lives.

Table 2.—*Favorable Results in Infiltrating Carcinoma of the Bladder During Five Year Period*

Name	Age	Pathologic Diagnosis	Induration	Slough	Size Base	Location	Time Well
S. J. S.	54	Papilloma	Vaginal, 2.5 × 2.5 cm.	0	Extensive	Base	11 years
J. A. H.	62	Carcinoma	Flat ulcer, raised edges	+	1 × 2 cm.	Above left ureter	5 years; death, apoplexy
L. M.	72	Carcinoma	Vaginal	?	2 × 3 cm.	Trigon	11 years
F. M. H.	48	Papillary carcinoma	Base of tumor*	+	Several nodules 1 × 1 cm.	Bladder neck	5 years
S. S.	59	Papillary carcinoma, infiltrating	Base of tumor*	+	3 × 3 cm. 3 × 2 cm.	Right ureter	7 years
H. J. D.	53	Carcinoma	Base of tumor*	+	2.5 × 2.5 cm.	Lateral wall	6 years
F. J. M.	51	Papilloma	Base of tumor*	0	3 × 4 cm.	Left bladder base	6 years; died of kidney disease
W. H. M.	50	Squamous infiltrating carcinoma	Base of tumor*	+	3 × 4 cm.	Anterior bladder wall	7 years
W. N. L.	72	Papillary carcinoma	Base of tumor*	?	5 × 6 cm.	Entire right wall	6 years
A. W.	58	Infiltrating carcinoma	Entire tumor*	0	3 × 2 × 2 cm.	Left bladder neck	6 years; slight recurrent papilloma after 5 years
P. W.	55	Papillary carcinoma	Flat ulcerated	+	5 × 5 cm.	.....	6 years
L. B.	45	Infiltrating carcinoma	?	+	2 × 2 cm.	Left base	5 years

* Induration felt at open operation.

There are several points in the performance of the suprapubic implantation of radium that merit comment:

1. The contents of the bladder, often badly infected, should not be spilled in the open wound. The best way to prevent this is to empty the bladder by means of an aspirating device, padding the wound well and removing any soiled pads after the bladder is empty.

2. Cautery removal of protruding parts of the tumor accomplishes two things: bleeding is minimized and infection is controlled. This last factor is valuable when the tumor is of the sloughy, badly infected type. The cautery used should be the quick heating, electric type. In addition, the base of the tumor should be well exposed so that radium implantation can be accurately done.

3. If the tumor is at all large, if bleeding has been an important symptom, or if the bladder is badly infected, I object to sewing up the bladder without drainage. Instead, a rubber drainage tube is placed in the bladder and removed when the bleeding has stopped or the infection is controlled, generally in several days. The bladder is not sewed to the abdominal wound, but a silkworm stitch is placed in the lower part of the bladder, so that it can be lifted up in case of need.

4. Gold seeds of radium of a strength of about 2 millicuries are implanted 1.5 cm. apart throughout the base of the growth. This is the method of choice, and rarely is any other form of radium used.

5. We have a large and growing series in which bladder cancers have been controlled by the cystoscopic application of radium. This should not be attempted by one not experienced in the use of radium, and if there is any reason to doubt that a tumor will be controlled, the suprapubic operation should be resorted to.

DISADVANTAGES OF RADIUM

Gold seeds can cause just as much slough as the older glass seeds although they generally do not. This slough may take a long time to pass off, as it may become encrusted with phosphates. The gold seeds, as a whole, cause a good deal less irritation than glass seeds, but if twenty or more are implanted in the base of the bladder, rectal irritation may be considerable, and may last several weeks.

As opposed to this, the flexibility of radium and its use in bladder tumors, the low mortality of its suprapubic application and the possibility of many small tumors being controlled intravesically so far overbalance the disadvantages that today radium is the method of election in controlling bladder tumors.

134 East Seventy-Sixth Street.

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REGENERATION OF THE BLADDER FOLLOWING RESECTION

PRELIMINARY REPORT ON AN EXPERIMENTAL STUDY *

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When necessity arises that makes a wide resection of the bladder peremptory, a large number of patients become solicitous as to what the function of the bladder will be after part of it has been removed. This solicitude arises so often that it is a striking feature, and it is because the urologist is assailed by this question that it has occurred to us that the function of the small bladder, or rather the regeneration of the bladder following resection, is important enough to merit consideration.

The two lesions which most frequently require resections are carcinoma and elusive ulcer. If the lesions are treated by resection, it is imperative that the resection be very wide, and as a result a very small bladder is often left. This induces the frequent query on the part of the patient as to the ultimate outcome, from the point of view of the proper functioning, of a bladder so much smaller than normal.

In our series of experiments to determine just how the newly formed bladder comes into being, whether by stretching or dilatation of the small remnant of bladder or by regeneration, or by both, we were prompted by the thought that it was advisable to determine the rapidity with which the bladder is formed and not only

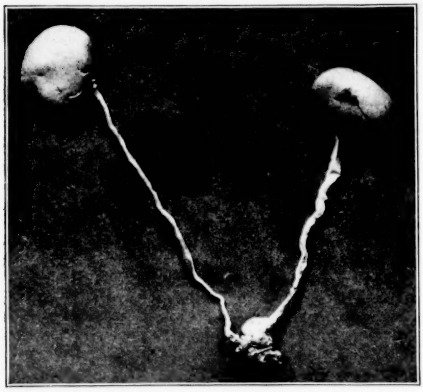

Fig. 1.—Bladder one week after extensive resection: bladder about the size of a navy bean; left ureter rises from the top of bladder and shows marked hydro-ureter.

to study its shape, form, size and outline but also to record observations on its physiologic and histologic characteristics.

* Read before the Section on Urology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

* From the Thompson Fund for Urological Research and the Laboratory of Experimental Surgery, Rush Medical College of the University of Chicago.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

For the purpose of our experiments rabbits were chiefly used, the number of dogs being in the minority, because we found that our experiments on rabbits yielded more satisfactory results than those on dogs. Thirty rabbits were operated on—twenty males and ten females—and only seven dogs were used. None of the dogs lived long enough to warrant satisfactory conclusions in regard to newly formed bladders, death intervening because of acute intercurrent infections.

Fig. 2.—Pear shaped bladder, normal; elongated bladder neck due to distention of the posterior urethra; bilateral regurgitation.

The first step in the preparation of the field was shaving the abdominal hair and applying tincture of iodine. Our object was to resect as much of the bladder as possible. In nearly all the cases, the resections were made directly above the ureteral orifices, or within 1 or 2 centimeters of them. In one or two instances the resection was carried out in the middle of the bladder; i. e., midway between the apex and the base. All the layers of the bladder wall were sewed together firmly by an over and over catgut suture. In some cases a second row of fine 00 catgut suture was used, going only through the muscular layer so as to bury the first line of suture. The usual abdominal repair of peritoneum, abdominal muscles and skin was made. A catheter was not placed in the bladder through the urethra, and in no instance was suprapubic drainage employed. The walls of the bladder were closely sewed together to prevent any escape of urine.

Five animals died. In two the cause of death was peritonitis due to a leakage in the line of suture. One animal died of acute pyelonephritis, one of pneumonia, and one from injuries caused by fighting.

CYSTOGRAMS

Before any of the animals were killed, it was thought advisable in each instance to obtain cystograms of the newly formed bladder. Through the catheter introduced through the urethra and then withdrawn, the bladder was filled with a 5 per cent solution of sodium bromide, by gravity, so as to avoid overdistention. In a general way the cystograms so obtained show very interesting conditions. A large number of the newly formed bladders are pyriform and have exactly the same shape and size as those in the cystograms obtained in the animals that were not operated on. In some instances, the bladders at the end of nine months appear to be just as large in the cystograms as those in the cystograms of these control animals. These cystograms are strikingly free of those distortions in their outlines which might

be attributed to adhesions. In only one instance does there seem to be a distortion low in the bladder which might be attributed to adhesions. This is a singular finding, particularly when the fact is taken into consideration that the bladder resected in each instance was almost complete.

Several of the cystograms made in normal rabbits show regurgitation, which is also seen in some made in the animals that were operated on. In one instance, the regurgitation was only unilateral.

In one of the cystograms made in a normal animal, the cystogram resembles very closely those made in patients after suprapubic prostatectomy, in whom, apparently, the internal sphincter was insufficient and had allowed the fluid to run into the prostatic urethra, a point noted by Hyman [1] in 1914.

Of great interest in this series of cystograms is the fact that a cystogram made two months after operation

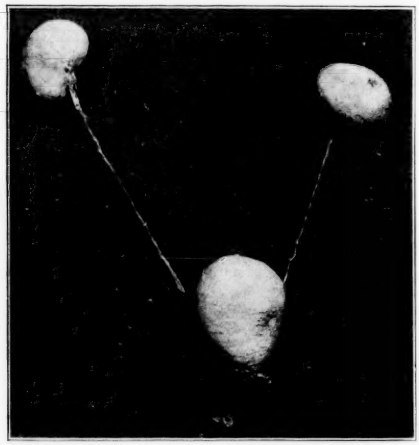

Fig. 3.—Six months after wide resection: bladder oval in outline, broader than normal, smooth and with rounded dome; ureters of normal size.

shows a bladder that is almost fully as large as one might judge a normal bladder to be, a positive indication that in this instance the regeneration occurred very early and very rapidly. This fits in with the statements of some other experimenters who mention that immediately after operation the animal had an incontinence and a continual dribbling of urine. This untoward symptom rapidly disappeared and the animal began to void in a natural way, which apparently signified an early formation of a new bladder.

REGURGITATION

Regurgitation up the ureter into the kidney pelvis of the fluid used in making a cystogram is an interesting phenomenon that has been noted in normal laboratory animals, in normal human beings, and also under varying pathologic vesical conditions.

Regurgitation of vesical contents under normal conditions in experimental animals was obtained by Semblinow in 1883, and later on by Levin and Goldschmidt in 1893 and 1898, Courtode and Guyan in 1894, Marcus in 1903, Wislocki and O'Connor in 1920, and by Graves and Davidoff in 1923.

In our own work we were able to demonstrate regurgitation in 50 per cent of normal animals and in 35 per cent of experimental animals after extensive, as well as lesser, resections. So far as we know, this is the first time that this phenomenon has been produced in experimental animals with regenerated bladders. It would appear fair to assume that extensive resection and subsequent regeneration of the bladder do not in any way interfere with the phenomenon of ureteral reflux. In normal rabbits the reflux was bilateral in most instances, and only in a few was it unilateral. In the newly formed bladder it was bilateral in all cases excepting one.

Regurgitation in normals as well as in pathologic bladders has been demonstrated by one of us in a previous publication.[2] Reports of cases in which regurgitation occurred in bladders after extensive resections are rather uncommon. The publication of Ravasini [3] is the only one with which we are familiar at the present time. In his report of an extensive resection of the bladder for tumor, he states that a cystogram was made and this showed a bilateral reflux. But the fact should not be overlooked that in his case one of the ureters had been resected and transplanted into the bladder, so that regurgitation on one side might have been due to the transplantation. In our experiments the ureters remained intact.

DESCRIPTION OF THE REFORMED BLADDER

In general, the size and shape of the newly formed bladder corresponds accurately with the outline of the bladder in the cystograms. The wall of the bladder appears to be somewhat thinner than that of the normal bladder, and this in spite of the fact that these regenerated bladders attained a rather large size. The reformed bladder is singularly free of adhesions, the rule rather than the exception being that adhesions were absent. Here and there adhesions between the bladder and the abdominal muscles were encountered.

One of the striking changes in the part of the bladder in the trigon. The base of the bladder showed a good deal of distortion, so that the between the ureteral openings was much wider than normal. In practically all the cases, the trigon was distorted and pulled upward, so that the ureteral insertion was much higher in the regenerated bladders than in normal. In one instance, the left ureter appeared to rise from the top of the bladder. These changes, namely, the lateral displacement of the ureteral openings, correspond with the changes seen in the ureters on the posterior side in that the ureters appear to be farther apart than normal. The lateral displacement of the ureters was very marked in one case, in which instance the difference between the vas deferens and the left ureter was 3 mm., and the difference between the vas on the right side and the right ureter was 17 mm.

The kidneys in every instance were normal, not showing any signs of hydronephrosis. In only one of these experiments was a slight degree of hydro-ureter encountered, and in this instance the ureter came off the top of the bladder. In view of the fact that this was the only instance in which a hydro-ureter was found, two possi-

1. Hyman: Ann. Surg., April, 1914.

2. Kretschmer, H. L.: Cystography: Its Value and Limitations in Surgery of the Bladder, Surg. Gynec. Obst. **23**: 709-717 (Dec.) 1916.
3. Ravasini, C.: Ztschr. f. Urol. **19**: 601-604, 1925.

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bilities for its occurrence may be mentioned: First, the ureter may have been located high in the specimen, and, second, the ureter may have been caught in a suture. This is merely a speculation, there being no evidence that this really occurred.

HISTOLOGIC REPORT

The newly formed bladder closely resembles the normal bladder, and because of this the microscopic picture is the same for the two. As in the normal bladder, the newly formed one consists of mucosa, submucosa, muscularis and a fibrous coat. The relationship between the first three layers is the same in the two bladders, with the occasional exception that the muscular coat in the newly formed bladder is somewhat thinner. The epithelial layer shows definite evidence of regeneration. The submucosa is slightly more vascular than the normal. It has already been stated that the muscular coat is thinner than in the normal bladder. This may be only relative however, depending on whether the bladder is dis or contracted.

Fig. 4.—Two months after resection: pyriform bladder with sharply defined bladder neck.

When the pieces d for section, and a close study was m h a view to determining whether th ontracted or distended bladder, the same histo e in the two sets of sections resulted.

When the normal bladder is distended and then fixed, the epithelial layer is thin and flat and is not thrown into folds; it averages from six to ten cells in thickness. The cells, however, are flatter and the nuclei stain darker and are more elongated than in the undistended bladder. The cytoplasm is small in amount or entirely absent. In the deeper portion of the mucosa, a few of the cells have lighter staining nuclei, are oval or round, and the cytoplasm is more abundant; but in general the cell walls cannot be distinguished. The submucosa is thin and contains a very scanty amount of connective tissue and elastic fibers; the vascularity seen in this layer is negligible. The muscle fibers are in close proximity to the mucosa, being separated only by very thin submucosa. The muscle layers are very thick, the average for the longitudinal fibers being from two to four cells in thickness in some areas, and from four to six cells in other areas. The muscle bundles as seen in cross section are not thick; the nuclei are thin and stain well. The muscle fibers do not appear to be thickened, but are slightly elongated. Between the muscle bundles is a delicate network of connective tissue and elastic fibers. These fibers as well as the connective tissue are not abundant.

When the reformed bladder is distended and then fixed, the epithelial layer is thin and is not thrown into folds, but there is evidence of regeneration of epithelium. The epithelial cells seem to contain vacuoles, as though something had been dissolved from the cytoplasm, and the nuclei are adherent to the cell wall. The thickness of the epithelial layer is about the same in these sections as in the corresponding sections of the normal bladder. The connective tissue is more abundant, and shows evidence of regeneration. The proportion of connective tissue to muscle is greater in these sections than in the normal bladder. The muscle fibers, however, appear to be about the same thickness and in general could hardly be distinguished from the normal bladder. Some of the sections show the muscle bundles and fibers to be thinner than in the corresponding normal bladder sections, but there is no evidence of hypertrophy of the muscle bundles. In the reformed bladder (not distended), in which the bladder has been allowed to contract before it is fixed, the mucous membrane was thrown into many prominent folds. The epithelium is from twelve to eighteen cells in thickness, and has the appearance of cylindric epithelium. The epithelial cells appear more like normal bladder epithelial cells and are of a definite cell outline with abundant cytoplasm and oval to round nuclei which take a pale stain. Regeneration of the epithelium is smooth in outline and regular, and averages from six to eight cells in thickness. Just below this in the submucosa there is some regeneration of elastic tissue and fibers.

Fig. 5.—Same animal as in figure 4: cystogram made two days later showing bilateral regurgitation.

In some of the sections the connective tissue is abundant, and the submucosa is of normal thickness and its vascularity increased. The muscle layer is of about normal thickness, and the muscle bundles as well as the muscle fibers are perhaps slightly thinner than normal. Other sections show muscle fibers that are as thick as normal, especially from the sections made from the contracted bladder.

COMMENT

The theoretical considerations dealing with the question of regeneration of the bladder are very interesting. Schiller [4] deduces from a close study of the histologic observations in his experiments a definite proof which

4. Schiller, H.: Surg. Gynec. Obst. **36**: 24-26 (Jan.) 1923.

justifies him in speaking of a true regenerative process in these reformed bladders: the muscle fibers in the newly formed wall are slender, as are likewise the muscle bundles. It is his opinion that were the conditions hypertrophic and hyperplastic, the contrary would occur. Hyperplasia, no doubt, occurs shortly after resection, but regeneration soon sets in and plays an important rôle.

Schwarz [5] has reported the results of his experiments in two cases. His conclusion is as follows: From the small portion of the organ left in situ, probably from the upper portion of the urethra and from the neck of the bladder, there is regenerated in a short time, by distention and consequent hyperplasia of the tissues concerned, a new hollow organ, moderately ample, serving to hold the urine, and resembling more or less a normal bladder.

Tizzoni and Poggi [6] state that the success of the operation in their experiments should be attributed to the formation of a new bladder from the last portion of the urinary tract, a bladder which, except for the thinness of its muscular walls, has all the anatomic-histologic characteristics of a normal bladder, and which retains all the functions; that is, it is capable of retaining the urine in a perfect manner and of regularly emitting at intervals a jetlike stream.

Fig. 6.—Eight months after resection: a very large pyriform bladder that extends above the crest of the ilium; sharply defined bladder neck.

They are of the opinion that this bladder was regenerated from below the neck or from portions of it and from the first portion of the urethra.

In this connection, it is interesting to mention the clinical case reported by Nicolich, who did a very extensive resection of the bladder, leaving only the trigon. The patient died a year after the operation, and the new bladder was examined histologically. The wall had two epithelial layers, the surface one being composed of cylindric cells with basal nuclei. Beneath the layer of cylindric cells was the submucosa composed of a layer of connective tissue-like fibers, and next were interwoven or crisscrossed muscle fibers surrounded by connective tissue.

From his experiment, Nicolich drew the conclusion that in man also the spontaneous regeneration of the bladder wall is possible.

Delfino [7] came to the conclusion that it is possible to perform subtotal or total cystectomy on animals, without its being necessary to suture the edges of the wound in order to achieve the regeneration of the bladder. Histologic examination of pieces of the regenerated bladder showed that it was anatomically identical to a normal bladder.

Fig. 7.—Nine months after wide resection: bladder elliptic, smooth, large and of normal size. No evidence of distortion or adhesions; ureters torn from bladder. Compare with figure 6.

In our experiments all the bladders were sewed tight, since we tried to carry out or to imitate as closely as possible the surgical technic employed in man.

SUMMARY

1. Extensive resection of the bladder is followed by the formation of a new bladder.

2. The newly formed bladder fulfils completely the function of the old bladder in that it is capable of retaining the urine for many hours and of discharging urine in the normal manner.

3. Incontinence as a permanent complication does not follow even the widest type of resection.

4. From the histologic picture and its close resemblance to the normal bladder, it would appear that the newly formed bladder is the result of regeneration.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KEYES, BARRINGER, AND KRETSCHMER AND BARBER

DR. EDWIN BEER, New York: As one reviews the literature of the subject one might get the idea, according to Dr. Barringer's statement, that most of the cases of carcinoma of the bladder, including papillary and infiltrating carcinoma, are amenable to radium therapy. Our results in a series of more than 400 cases treated with radium do not compare with his, either as to the immediate mortality or as to the end-results. These cases fall into various groups pathologically and therapeutically. First, there are papillomas which are definitely benign and respond to the high frequency current cystoscopically employed. The second group includes the papillomas of the bladder which cannot be treated successfully cystoscopically although they are benign. In about 20 per cent of these cases there are local recurrences, or recurrences in a new site in the bladder. Of the second group, including papillomatoses that came to operation in our series, we had thirty-three cases. In these cases, a suprapubic approach was made and the tumors were destroyed with the cautery or the current, with or without the electric knife. In these, the failures were 12 per cent. In the third group, the papillary carcinomas, we have been able occasionally to destroy small tumors with the high frequency current. Operative removal is indicated when the result of the high frequency current does not show definite destruction of the growth and favorable response. We have operated in twenty-eight cases in this group with an operative mortality of 14 per cent and recurrences in 25 per cent. More than 60 per cent of those surviving the operation appear to be cured. In the fourth group of cases, the infiltrating carcinomas, the operation of choice has been resection, whenever possible.

5. Schwarz: Spermentale, Arch. di biol., 1891, pp. 484-492.
6. Tizzoni and Poggi: Memorie della R. Accademia della scienza dell Instituto di Bologna, series 5, 1890, pp. 525-532.
7. Delfino, quoted by Ravasini (footnote 3).

In case resection is impossible, radium can be used. In these cases the operative mortality was 21 per cent (eight cases); there were recurrences in 55 per cent of those who survived operation, and 45 per cent of those surviving the operation seemed cured. Four patients who had been given preoperative deep roentgen-ray treatment were apparently cured for a period running between three and five years. In sixteen cases radium seeds were introduced through the cystoscope, without any mortality. Eight cases were apparently cured, and eight recurred. In thirty-one cases in which resection was impossible and radium had to be applied, we had a mortality of 33 per cent; six cases were apparently controlled (30 per cent). It is hard to say whether these patients were cured for they have not all been examined cystoscopically, but 30 per cent were apparently cured. In these surgery of the resection type was impossible. Reports from Chicago and Baltimore suggest that deep roentgen-ray therapy in primary tumors of the bladder is almost a panacea, but we have not had a single cure, although there has been cessation of symptoms for a time and stoppage of the hematuria.

DR. WALTMAN WALTERS, Rochester, Minn.: One of the sound principles of surgery is that the surgeon should use that method which will insure him the best results with the least risk to the patient. It is this natural divergence of choice that necessitates so many methods of treating gastric and duodenal ulcers and lesions of the biliary tract. The variety of methods is further increased in the treatment of incurable malignant diseases in general by the demand for alleviation of the symptoms or prolongation of life. If symptoms of nephritis are manifest in the first twenty-four hours after resection of the bladder for malignant tumor, when it has been necessary to ligate a ureter and drop it back, that kidney should be removed immediately. Such kidneys always contain multiple abscesses. If they are not removed, the infection becomes diffuse and a serious menace to life. In the coagulation treatment of tumors of the bladder, a severe toxemia is often set up which extends to the gastro-intestinal tract, as evidenced by high elevation of the blood urea and by alkalosis. This can be controlled by the intravenous use of sodium chloride solution in large amounts (which will stimulate intestinal peristalsis), and by the frequent use of the stomach tube. If these methods are not effective, cecostomy is of great advantage in relieving the gastro-intestinal tract of flatus, as Hunt recently pointed out. We do not know whether the bad results of diathermy are due to the intoxication and resultant chemical changes in the blood or to the direct toxic effect on the gastro-intestinal tract. The fact remains, however, that in such cases the frequent use of the stomach tube, the intravenous use of sodium chloride solution and the performance of cecostomy will often save a patient's life.

DR. GILBERT J. THOMAS, Minneapolis: The diagnosis of carcinoma of the bladder may be made by cystoscopic observation and microscopic study. It is our habit to rely on the cystoscopic examination of all tumors with small pedicles and to treat the patient accordingly. From the standpoint of treatment, we like to divide cases of tumor of the bladder into three groups: first, those that may be treated effectively through the cystoscope; second, the group in which palliation only is required because of the extent and location of the tumor, and which may be treated through the cystoscope by the implantation of radium seeds, or fulguration, or both; and third, those cases in which it is thought that the patient has a fair chance of cure, after cystoscopic and microscopic diagnoses have been made. The patient in this group should be treated by a suprapubic cystotomy. The type of treatment to be applied when the bladder is opened depends somewhat on the experience of the surgeon. When the tumor is so situated that it does not affect or injure the surrounding organs, a clean resection should be done. I am speaking of a large major growth and not of the tiny multiple tumors that are frequently found. In treating these cases with diathermy and radium, we have had the best results with diathermy. I agree with Dr. Keyes that if one thinks that diathermy will remove the growth, why use the seeds? If diathermy cannot be used thoroughly because of the danger of injuring adjacent organs, radium should be used in addition. An important part of the treatment comes after operation, if we are going to get information that will help us to determine the proper method of treatment. A careful check-up following every operation must be made. It is my practice to examine the patient cystoscopically just as soon as the symptoms produced by fulguration or any other method of treatment have subsided. In most cases, the first cystoscopic examination is made within the first month and never later than three months. The patient is asked to come in if he does not report voluntarily. In this way we can determine the exact results that we are obtaining. The American Urological Association has started a registry at the Army Medical School which we hope will help us in checking the results of treatment of tumors of the bladder.

DR. GEORGE A. WYETH, New York: Dr. William J. Mayo has pointed out that only particles of molecule size, such as sugar, the amino acids and other crystalloids, are absorbed directly into the blood capillaries of the body, while the colloids and particles of larger size are taken up by the lymphatics. He says that bacteria and malignant cells do not pass directly

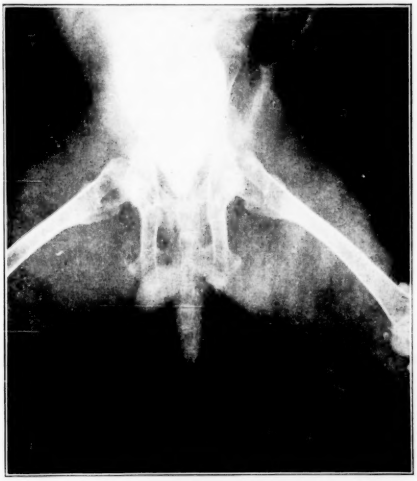

Fig. 8.—Six months after resection: attention is called to large size of bladder, which projects above the crest of the ilium, and to the configuration of the bladder neck.

into the capillaries but are carried by phagocytes into the lymphatics, which are a closed system of vessels. To emphasize this point is to emphasize the danger of dissemination that lies in the severance of these lymphatics when using the scalpel, and the advantage which inheres in a method that seals these lymphatics, instead of opening them. This is best performed by the endotherm knife or cutting current. Since its perfection we have discontinued the use of the scalpel in the treatment of malignant conditions. We believe that endothermy will do all that the scalpel will do and with more lasting benefit. The mistake most genito-urinary men are making with electrothermic methods is in not using them until other methods have failed, and then, as a last resort, produce too widespread, needless destruction by uncontrolled dosage, the effect of which is often disastrous and is always caused by the use of the blunt electrode. A large area of coagulation necrosis naturally results with its consequent toxemia, for which the doctor has just prescribed but which should never have happened. It is always the result of faulty technic. Drs. Cunningham, Graves and Bovie have worked out a method of measuring by thermocouples the amount of heat induced in the tissues (not in the applicator) at the time of applying diathermy. This is important.

Repeated attempts to fulgurate a benign tumor are all wrong. This is not endothermy. If we expect to destroy a tumor we should go after the growth there and then and destroy it and remove it. I have learned that underdosage with these currents is just as bad as underdosage with radium, and we shall not get results unless we use the current properly. I should like to ask Dr. Barringer what kind of "cautery" he uses in treating malignant tumors.

DR. B. C. CORBUS, Chicago: It is well known that one pertinent fact dominates the treatment of cancer, i. e., its recurrence and its inoculation in the wound. The fact that the roentgen ray, radium and thermo-electrocoagulation are being used by progressive surgeons everywhere for the removal of accessible tumors, instead of excision, is significant. Since bladder tumors can be destroyed by thermo-electrocoagulation, either transurethrally or through a cystotomy wound, their treatment and removal is comparable to that of accessible tumors in other parts of the body. Recently, we have come into the possession of a diathermy cystoscope, which utilizes the shaft of the cystoscope as the active electrode. We have found this method to be far superior to any electrode that we could use through the ordinary operating cystoscope. In working out a method for the removal of bladder tumors transvesically, we must adhere to the edict of Beer, who says that everything should be done to avoid transplantation of the bladder tumors. The success of the operation is in direct proportion to the time the tumors have existed, and to their size and character, whether benign or malignant. If these growths are attacked in their incipient stage they can easily be destroyed, and the results will be good.

DR. D. N. EISENDRATH, Chicago: One point that Dr. Keyes brought out that should be emphasized is the great difference between clinical and cellular malignancy. Although the microscope will show carcinoma in both instances, one case will respond to the treatment and remain cured while the other will not show any response to treatment. What is it that kills the patients with bladder carcinoma? I have recently followed the teachings of the French school by doing a little ureterostomy as close as possible to the cervix in some inoperable cases. The response has been immediate, and one patient is alive after two years. In reference to Dr. Wyeth's remarks, I am afraid that his experience in endothermy is not as well developed in bladder carcinoma or tumor of the bladder as that of some of the rest of us. In Chicago we are using diathermy in carcinoma of the bladder much more frequently than radium and are much pleased with the results. We are waiting until five years have passed before we say much about it, but from the immediate results in a large series of cases, we are pleased and hopeful. I think that Dr. Wyeth is making a mistake in saying that we are trying to use a desiccating current. That, as I understand it, simply desiccates the surface of the tumor. What we do is to burn through the tumor without leaving any vestige of it. I think that Dr. Wyeth leaves a false impression when he criticizes our method of using diathermy. Whether he quibbles on one word or another does not make much difference.

DR. BRANSFORD LEWIS, St. Louis: I wish to compliment the classification given by Dr. Keyes, which is ample although simple. The papillary and infiltrating carcinomas meet all requirements. I never was a convert to the rather complicated and not exceedingly useful classification attempted several years ago by Dr. Geraghty. In reference to taking specimens through the cystoscope for pathologic examination, I think that depends on the growth itself. In the cauliflower-like growths we do not do much harm; but if we try to cut pieces out of the infiltrating growth, we do harm and do not add much to the clinical diagnosis, for this can be made without such a procedure. I have noticed a great difference of opinion on this point among surgeons, some saying that sections should never be taken by the cystoscope. In reference to diathermy and radium, there is a place for both these methods. If a large tumor is recognized as carcinoma, one should not use radium alone in that case. I would expect to remove the gross portion of the tumor by means of the cautery knife, then use diathermy and get all the effect I could; then, after a month or so, perhaps, make an implantation of radium seeds, dependent on the progress of the case. I believe that the whole situation is vastly more satisfactory now than it was five or six years ago. This information should be passed on to the general profession and they should be made to understand that these cases are not hopeless or cheerless and without promise. We have a number of patients who are well after five, six and seven years as a result of these modern methods of treatment which is very different from the situation of former times and the old methods with 100 per cent mortality.

DR. B. A. THOMAS, Philadelphia: Papillary carcinomas are of two types: (*a*) those exhibiting carcinomatous degeneration of their papillary surface, but possessed of a benign pedicle, and (*b*) those with a carcinomatous pedicle involving the bladder wall. The former respond to treatment admirably and are curable even by cystoscopic fulguration; the latter must be classed with infiltrating carcinomas in general. They should never be treated by fulguration, if the growth can be excised radically, and obviously the results, comparatively, are poor. Some, I fear, are attempting to relegate radical surgery to the background in the treatment of bladder carcinoma. If the growth is situated in an accessible portion of the bladder, it should be resected, with transplantation of either one or both ureters, if necessary. On the other hand, there is a type of advanced, extensive bladder carcinoma which is absolutely inoperable, in which morphine and urinary deviation, if indicated, should be the sole considerations. Between these two is a class of bladder carcinoma to which some of us have directed our attention for several years and for which we are trying to develop some form of beneficial treatment, realizing full well that we can cure only a small percentage, if any, of the patients, but assured that by cystotomy and destruction of all visible and palpable evidence of the growth, by electrothermic coagulation, fulguration or diathermy, however it may be styled, symptoms may be alleviated and life prolonged. That is the type in which, in order to remove the growth surgically, a total cystectomy, preceded by bilateral nephrostomy or transplantation of both ureters into the sigmoid or elsewhere, would be necessary, and obviously such a procedure can be seldom executed. I have one case in which this operation has been done and the patient is alive after fifteen years. Therefore, I feel there is a small class in which the entire bladder should be removed after transplantation of the ureters as recommended by Coffey, all this not being done at one time, however. Finally, I wish to say a word relative to the radically inoperable class, in which today we are using, suprapubically, diathermy, electrothermic coagulation, fulguration, or whatever one wishes to call it with or without radium. A few years ago, with Pfahler, I treated about thirty cases of carcinoma of the bladder by this method, and secured amelioration of symptoms from a few months to two or three years, sometimes for five years; but in no case, with one exception, was an absolute cure obtained. In two or three cases, the patient's death was undoubtedly hastened, I believe, by the implantation of radium needles, which precipitated metastasis to the lymphatics and bones. For the last three years, we have not supplemented diathermy by any implantation of radium, and I am positively convinced that our results have been better than when we employed massive doses of radium by needle implantation, supplementing thorough destruction of the tumor mass by fulguration.

DR. JOHN H. CUNNINGHAM, Boston: This group of papers is very important, particularly because they again emphasize the fact that we are not curing many of these patients by any of the various methods of treatment commonly employed. My results by whatever method of treatment have been disappointing in the end. The cases which I have thought were cured are one by one showing recurrence, so that my list of brilliant results is becoming smaller as time goes on, and I have no doubt that in the end all the patients that I have considered cured will ultimately show recurrences. I dislike to be pessimistic, but I cannot help feeling that to date our methods are to be considered palliative rather than curative and that optimism regarding any particular result should be most reserved. A recent autopsy made on a patient who had had an infiltrating carcinoma of the bladder about the size of a dime was enlighten-

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ing. The tumor had been thoroughly treated by diathermy and radium through suprapubic exposure, and the patient had been free from evidence of disease for a period of two years and four months. The pathologists who made the examination of the original specimen removed at operation performed the autopsy. There was no evidence of tumor in the bladder. Sections removed from the original site of the tumor and carefully studied showed small areas of inactive carcinoma deep in the muscle structure of the bladder wall. The question arises whether or not this is the condition present in what we are inclined to consider cured cases, and whether or not these deeply seated inactive areas do not again become active, producing clinical recurrences.

DR. HERMON C. BUMPUS, JR., Rochester, Minn.: I feel very strongly about the question of taking specimens. As Dr. Beer said, there is no type of treatment that can be directed to all types of tumor, but how are we to know the type of tumor or know the kind of treatment to use without removing a piece of the growth? It is not possible to discuss intelligently with a patient the kind of treatment he should have unless we have a specimen. Furthermore, if cure follows treatment there is no means of knowing whether the grade of malignancy was high or low. It often happens that a lesion which grossly appears highly malignant will, on microscopic examination, be found to be of a low degree of malignancy. In some of these cases we would not attempt to do anything because of the gross appearance, whereas with the knowledge obtained from examination of the specimen good results may follow treatment. It seems to me that those who claim that malignancy is spread by the taking of specimens should prove that this is so instead of asking us to prove that it is not so. We have taken specimens for many years and we feel that the end justifies the means.

DR. E. L. KEYES, New York: Dr. Walters spoke of ureteral complications. Dr. Barringer and I, among others, pay no attention whatever to the ureter in implanting the radium. Pyonephrosis has resulted from ureter block by scar in only two cases that I know of. In both there was recovery without operation on the kidney. Dr. Wyeth spoke of the various forms of diathermy. For many years Dr. Beer has been advocating cautery removal of bladder growths on the principles involved in endothermy, and he has today reported the control by radium of carcinoma of the bladder which he believed could not be relieved by excision with the cautery. Dr. Wyeth made a plea for a real attack on cancer, the immediate complete removal of the growth, and not this piddling idea of going back at it again and again. I question whether any one would disagree with that point of view, but, unfortunately, we do not always get the growth out, no matter how hard we strive. I hold that we must have the patients return promptly for examination to see whether we have the growth all out, being ready to attack it again if necessary. Dr. Eisendrath and Dr. Cunningham both asked about the time we would set for a cure. I think that we can talk of cure of carcinoma of the bladder as we talk of cure of syphilis or tuberculosis. Dr. Cunningham's postmortem observation is scarcely proper in this connection. I have no doubt that many patients who pass as clinically cured still retain a few carcinoma cells, but I should be perfectly satisfied to be that kind of a patient myself if the cells would remain in that condition. Therapy cannot penetrate that deeply into the tissues. A clinical cure is all that we can ask for. Dr. Eisendrath says that he favors the skin in place of the bowel for ureterostomy. I quite agree. But we should balance very carefully the prospects in each case in which we consider relieving the renal back pressure, for thus to prolong life is in some instances to do the patient a disservice. Dr. Bumpus pleads for biopsy. The suprapubic operation obtains enough specimen for diagnosis. For cystoscopic observation, I agree that biopsy is convenient.

DR. B. S. BARRINGER, New York: Dr. Beer brought up the question of operation versus radium, with a consideration of the mortality and so forth. In our first hundred cases we had rather a low mortality. Doubtless, these figures will go up somewhat, but the mortality will never equal that of resection of the bladder. I do not think that they are in the same class so far as the operative mortality is concerned. The way the operation is done is of great importance. We do all operations with local anesthesia over the bladder and a low spinal anesthesia. One of the worst cases I reported was one in which we used a general anesthetic, and I think that contributed to the death. I am sure that by this method we have been able to attack cases in which operation could not have been performed by other means. I recall one patient particularly who had an infiltrating carcinoma. Half of the bladder was a carcinomatous mass but that man is now approaching his eightieth year and is well after seven years. I think we have a larger range of activity with radium than with operation. Regarding kidney complications, Dr. Keyes reported a case. I can add something to that. The same patient who was passing pus from the kidney also had a residual urine of 4 or 5 ounces, with a prostatic hypertrophy, but he lived for five years cancer free. We had only one case of kidney complication in which we had to operate under anesthesia with procaine hydrochloride. That patient was very sick and subsequently died from that complication. We have tried to keep away from every other method but radium because we want to know to what to attribute the results, if we get any. We have used simply the snare or the electric cautery in order, as I said in my paper, to cut off the protruding part of the tumor rapidly. I think that the electric cautery is the best method of doing this and of exposing the base. We have not used the cautery for the treatment of the tumor, but to get rid of the top of the tumor which should not be left in the bladder, and to expose the base in order to implant radium. As to the time limit for cure, certainly ten years is the limit. If a patient goes that long, I think he might well be said to be cured. I have seen cases recur after six years, but none later than that.

SCOLIOSIS *

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AND
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It is our purpose in this paper to present, in a general way, a brief summary of scoliosis; its etiology and diagnosis will be considered briefly, and treatment will be discussed from the nonoperative and operative aspects. Also, illustrative cases will be reported.

As is well known, there are two types of lateral curvature: functional, often called total, false or postural, and structural, often called true, organic or habitual. The functional type is a unilateral and total curve without demonstrable changes in the bony structures of the spine. The structural type is usually a double or triple curve with definite changes in the bony structure of the spine.

ETIOLOGY

Functional scoliosis is usually due to bad posture, unilateral short legs, unilateral inequalities in the pelvis, or disturbances of vision. It may be seen early in poliomyelitis in which there is unequal abdominal weakness. Later on, a structural curve may result.

Structural scoliosis, as far as is known, may be due to congenital malformations, paralysis, empyema, deficiency diseases and so-called idiopathic conditions.

Congenital malformations producing scoliosis are absence of ribs, hemivertebrae, wedge shaped vertebrae, sacralized fifth or extra lumbar vertebrae and spondylolisthesis.

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* Read before the Section on Orthopedic Surgery at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

The common so-called deficiency diseases producing lateral curvature are rickets, achondroplasia and osteomalacia. Paralytic curvatures are seen in poliomyelitis, spastic hemiplegia, incomplete cord injuries occurring in childbirth, and pseudomuscular dystrophy. Empyema, when unilateral, may result in severe lateral curvature. Idiopathic scoliosis may be due to the so-called vertebral epiphysitis. It is our opinion that vertebral epiphysitis is not primarily epiphysitis but is the result of changes brought about by lack of development in the body of the spine.

In 1915, Engelmann [1] called attention to an anterior wedge shaped area of decreased radiability which he noticed in the bodies of several vertebrae. This area he called an incisura. As a matter of fact, it is a normal condition seen in the split spines of the new-born, and it may persist over a variable length of time in different individuals. It is a very soft, semicartilaginous condition, and is so deep and so situated that anything which interferes with its replacement by bone may result in compression of the anterior portion of the vertebral bodies and result in curvature or kyphosis. Examination should be made in a good light with the patient stripped and standing.

In teaching the therapy of lateral curvature, we find that the accompanying simple table helps in differentiating the two types.

A roentgenogram of the whole spine is necessary, and often shows that the curvature is worse than when seen clinically. The roentgenogram forms the most reliable means for recording the progress of the disease.

Scoliosis

Functional	Structural
90 per cent left total	90 per cent right dorsal left lumbar
Left shoulder high	Right shoulder high
Left shoulder forward	Right shoulder forward
Rotation on the concave side disappears when recumbent	Rotation on the convex side does not disappear when recumbent

TREATMENT

In treating lateral curvature, the prognosis depends on the kind of curve, its severity and duration, and also on the underlying cause, the general health of the patient and the presence or lack of spinal flexibility. Functional curves may be cured by correcting inequalities in the length of the legs or pelvis by means of a lift in the heel of the shoe. Such correction as is necessary may be estimated by placing graduated lifts under the leg on the convex side of the curve until the spine is plumb. Exercises should then be prescribed to develop weak musculature and also to correct bad attitudes.

In the mild structural curves, exercises to increase the mobility of the spine should be practiced under intelligent supervision until the range of lateral motion is equal on the two sides. Following these, exercises to increase muscular development should be persisted in over a long period of time, especially during the period of growth.

In the moderate and severe types of lateral curvature, the exercises prescribed as stated should be given, and should be as heavy as the patient's physical condition will permit. In addition, one or more of the methods of severe stretching by hand, apparatus and corrective jackets is essential if one expects to accomplish much.

1. Engelmann: Ztschr. f. orthop. Chir. **35**: 256, 1915-1916.

In our clinic, the Lovett stretching board, Sayre suspension and the hinged jacket of Brewster are all used in addition to carefully planned exercises. This method of treatment is carried out very faithfully during the growing period.

It is our opinion that exercises should not be undertaken in these curves unless we are prepared to hold them in some efficient piece of apparatus, since increase in the flexibility will allow the spine to slump when the

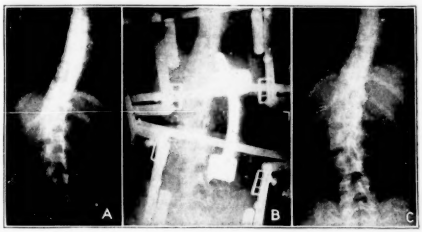

Fig. 1 (case 1).—*A*, before operation; *B*, after operation in jacket; *C*, after operation without jacket. Jacket was worn six months.

patient is in the erect position. We have found that the Brewster [2] hinged jacket will decrease the curve and produce more rapid flexibility than any other forms of corrective measures. This jacket is most useful in curves below the eighth dorsal vertebra. In curves above this region, a hinged shell which includes the head is used. The jacket not only corrects but maintains the correction and should be worn constantly. In the severe cases with visceral disturbance and rib pressure, it is necessary that a support be worn indefinitely in order to give comfort and to prevent ill health. Other means of managing such cases are available and will be considered below.

OPERATIVE TREATMENT

The principal indications for operative treatment are: (1) rapid increase in the curve; (2) signs of general debility or ill health; (3) rib pressure with intercostal or pelvic pain, and (4) inability to hold the curve in cases of infantile paralysis. The first three indications are for adult patients; the fourth is for children or adults.

1. When there is a rapid increase in the curve, especially in the rotation element, and it is found that no form of corrective apparatus will hold the spine, the advisability of fusion should be carefully considered.

2. Adult patients, with signs of general debility or ill health due to visceral disturbances, which are often brought about by slumping of the spine, which is flexible in the dorsolumbar region, should be operated on. Many of these patients gain from 4 to 6 inches in height and feel much improved in general health afterward.

3. Patients with rib pressure causing constant intercostal or pelvic pain should have fusion performed.

4. Patients affected with poliomyelitis, in whom there is great deformity in the erect sitting or standing position that can be nearly or wholly corrected in the recumbent position, may have fusion at any age. As a general rule, we believe that children should not have fusion, because the same factors that produced the curves are still present and can exert the same forces on the

2. Lovett, R. W., and Brewster, A. H.: Correction of Structural Lateral Curvature of Spine, J. A. M. A. **82**: 1115-1118 (April 5) 1924.

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growing fused bone which were exerted before fusion was done. The result of this is a recurrence and an increase of the deformity, producing curvatures which are practically impossible to correct by any means at our command. There is also another reason for non-operative treatment in growing children. If the curve cannot be corrected, the area of rotation of the bodies is lateral to the area of fusion resulting in a geometric figure; in other words, the lateral aspect of the total convex surfaces of the vertebral bodies forms the arc of a circle, and the area of fusion which is along the laminae and spinous and articular processes follows the concave aspect of the vertebral bodies so that the line of fusion gives a subtended cord to the arc. This cord which ties into the ends of the arc is shorter than the arc, and if the same rate of growth takes place in the cord and the arc, the total growth must be greater in the bodies, with the result that the lateral and rotation elements increase as growth takes place.

Many of the moderate cases of scoliosis which have been well treated become stationary after growth is complete and will not need further jacket treatment.

Most of the severe cases in adults, however, will settle, resulting in more deformity, body shortening, visceral compression and finally invalidism. Such patients are condemned to a jacket life in order to exist at all, and when such a condition becomes apparent, operative measures are necessary and are practically always of lasting benefit; the height is increased and visceral pressure more or less relieved, and as soon as the spine is fused the jacket may be discarded.

Before operating in our cases, we prescribe exercises to increase spinal flexibility, and the Brewster hinged jacket is worn constantly over a period of from eight to twelve weeks.

OPERATION

The neural arches are exposed subperiosteally out to the articular processes as in the Hibbs method, and if the patient is physically strong a complete Hibbs fusion is done. If the patient is not very rugged, the surfaces of the laminae are not osteotomized. In

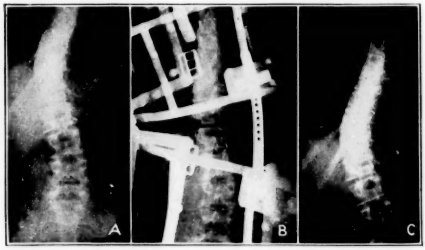

Fig. 2 (case 3).—*A*, before operation; *B*, after operation in jacket; *C*, after operation without jacket.

either case, two osteoperiosteal grafts are taken from the tibia and placed one on each side over the laminae, as recommended by Thomas.[3] The spinous processes are next split from tip to base and turned down laterally on top of the osteoperiosteal grafts, after the method of MacKenzie Forbes.[4] The wounds are closed, and the patient is put to bed without apparatus. The sutures are removed in ten or twelve days. By that time the patient is comfortable, and the jacket is again applied, beginning with slight correction and increasing as rapidly as the comfort of the patient will allow. The patient is kept recumbent for eight weeks, then allowed to sit up, and in nine weeks allowed to walk in a fully corrected jacket which is worn for eight months.

At the end of this time a supporting removable plaster jacket is worn for four more months, when all apparatus

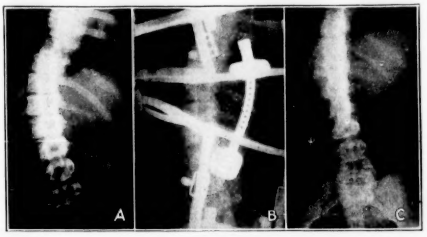

Fig. 3 (case 4).—*A*, before operation; *B*, after operation in jacket; *C*, after operation without jacket.

is removed. The results of this procedure are cosmetic improvement, diminution of the lateral and rotation elements, and an increase in height. If the fusion is satisfactory, such patients are not able to increase their body height when asked to push down with their hands on their hips. There is sufficient motion left in the spine for all practical purposes, and at the same time there is sufficient fixation to maintain the spine in a good position.

SUMMARY

1. Functional and mild structural curves can be managed by simple corrective measures.

2. Moderate and severe curves should be treated by corrective exercises and corrective apparatus.

3. Operative measures are to be recommended in adult patients whose spines are not already fixed by nature, and who are doomed to a jacket life.

4. Fusion should not be done on growing children except in paralysis, and then only in case of severe deformity which cannot be held by other measures.

REPORT OF CASES

CASE 1.—M. F., first seen at the age of 22 years with the history of long standing spinal curvature, for which exercises had been prescribed but for which a support had never been worn, had a left dorsal right dorsolumbar curve with rotation. Exercises were started and a removable jacket was applied in 1919. These jackets were worn continuously with exercises up to 1926. May 2, 1926, a fusion operation was done from the eighth thoracic to the fourth lumbar vertebra, combined with osteoperiosteal grafts of the tibia. In ten days a turnbuckle jacket was applied, and it was worn until April, 1927.

CASE 3.—M. N., aged 19, first seen, Dec. 30, 1924, had had a curve, noticed by the parents, for four years without any definite history of infantile paralysis. A turnbuckle jacket was applied in February, 1925. March 6, 1925, a spinal fusion operation was done from the fourth thoracic to the third lumbar vertebra with osteoperiosteal grafts. A turnbuckle jacket was applied on the tenth day. A jacket was worn until December, 1926, when it was removed and a corset applied.

CASE 4.—J. W., first seen in December, 1924, had had infantile paralysis in 1916 at the age of 13, and the curve developed shortly after. The patient had worn jackets and had exercises since that time. A turnbuckle jacket was applied in January,

3. Thomas, H. B.: Fusion in Scoliosis, J. A. M. A. **81**: 1575-1578 (Nov. 10) 1923.
4. Forbes, A. M.: J. Orthop. Surg. **2**: 509 (Sept.) 1920.

1925. June 10, 1925, a spinal fusion operation was done from the seventh thoracic to the fourth lumbar vertebra with osteoperiosteal grafts. A turnbuckle jacket was worn until May, 1926, when it was removed and a corset applied.

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ABSTRACT OF DISCUSSION

DR. ALBERT H. FREIBERG, Cincinnati: A person with a postural scoliosis may acquire a structural scoliosis. Something may cause softening of the vertebral bodies. I am not an enthusiast for fusion operations in structural scoliosis. Whether one is dealing with the paralytic variety or not, operation lacks a proper and rational basis. Each year our colleagues present cases to show that the spine is straighter than it was before, all of which I believe. I have not seen the results of these operations, shown in a satisfactory way, five and six years afterward, and after the patients have been released from mechanical support. Until this has been done, I prefer to keep my mind open on the subject. The essential nature of structural scoliosis lies in a deformity of the vertebral body. It has become more or less wedge shaped. If we subject a patient to a considerable operation, with the prospect of simply relieving a situation of painfulness or of modifying to an inconsiderable extent the degree of his deformity, and with the necessity of providing him with mechanical support for a long time, or, perhaps, even the rest of his life, we have proposed to him an operation of questionable advisability. Nothing that I have seen, either in the way of clinical cases or in demonstrations made in our professional meetings, has succeeded in convincing me that the fusion operation in structural scoliosis is a procedure justified by its results. When it comes to paralytic scoliosis, the fusion operation lacks the proper theoretical basis, to say the least. If the spine that is fused for paralytic scoliosis will afterward still require to be maintained by mechanical support, then so severe an operation is not justified. Unless these patients are given mechanical support continuously, a relapse will occur, unless we are entirely mistaken as to the way in which bone responds to function.

DR. F. J. GAENSLEN, Milwaukee: In an experience of about eight or ten cases I have obtained results that perhaps are encouraging in a way, although I feel that the final word has not been said. The authors discussed a method for fixation of a curve on the concave side and fixation of the ends of growth; it might be expected that growth would cause an increase in the curve. The transplantation of osteoperiosteal grafts, after the method of Thomas, is an excellent procedure and should be considered more frequently than it has been. It is extremely difficult to carry out fusion in the strict sense to one's complete satisfaction, especially on the concave side, and especially when one considers that just one break in the operative procedure, such as missing a single set of articular facets, may jeopardize the entire operation. Consequently, I have in both hospital and private practice reserved the operation for those few patients who after long periods of treatment did not respond to any of the methods instituted.

DR. GEORGE E. BENNETT, Baltimore: I feel that there are types of scoliosis in which operative treatment is good. One type is the painful, collapsible spine occurring in an adult, and athough one may not be able to do away with the necessity for all apparatus by operation, one can cut down the apparatus from a big spinal brace to a supporting corset. I feel that in that type of case much benefit is obtained by the operation. I believe that the same thing is true with the paralytic type of scoliosis. If one can cut down, by operation, the amount of mechanical appliance that is necessary for comfort, then I think that one is justified in doing the operation. I am very much opposed to promiscuous fusing of spines. I feel that there are cases in which it should be done, but so far we have limited it entirely to the absolutely uncontrolled types of paralysis and to the painful cases of collapsible spine in adults.

DR. SAMUEL KLEINBERG, New York: Dr. Freiberg's doubt about the advisability of fusions of the spine is based on two factors: First, that we do not know, in the main, the underlying causes of scoliosis, and second, that we have not had experience extending over a sufficiently long period of time to warrant positive statements. On the other hand, we do know that with the older or more conservative method we find that there is a certain percentage of cases, about 10 per cent, which cannot be controlled by the usual methods; that is, that the exercises and supportive treatment and so on, will still not control them and the deformity will tend to increase. Therefore, we are driven in adults, because of pain and increase of deformity, and in children, because of increase in deformity, to attempt to immobilize the spine, and we think that perhaps a spine fusion will be the basis of cure. So far at the Hospital for Ruptured and Crippled in the First Surgical Division, we have operated in about 150 cases. In the series in which operation has been performed since 1919, there have been relapses in five; that is, an increase of deformity over what it was before the operation. In all the others, the correction prior to the operation has been maintained. Therefore we feel encouraged, because so far in about 95 per cent not only has the deformity improved to some extent by our method of treatment, but the correction has been maintained, and in many of these cases the patients have gone without support for several years.

DR. FRANK R. OBER, Boston: We tried to be conservative but perhaps did not succeed. We do not recommend fusion in all types of scoliosis but only in selected cases in which we cannot control the curve by any other method, and then in children who have acquired their full growth. We do not believe that the same factors that produce change in the bone in children will produce a similar change in adults, because at the age of 21 or 22 the bones are fairly firm and if we can put in a good, solid bone graft, by fusing the laminae and spinous processes, we ought to be able at least to hold such a curve in a fairly secure position.

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PELLAGRA AMONG CHRONIC ALCOHOLIC ADDICTS

A CLINICAL AND LABORATORY STUDY*

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This report is a study of 100 patients at the Philadelphia General Hospital, who presented the cutaneous picture of pellagra. With few exceptions, to be discussed later, all were chronic alcoholic addicts, many of whom were admitted in the acute stage to the alcoholic ward, in the service of Dr. Joseph C. Doane. Others were seen in the different wards with variable complaints. Of the 100 patients, seventy-one were men and twenty-nine women, ranging in age from 25 to 79 years.

Symptoms of pellagra first appeared in the latter part of April, and continued until the end of October. Such symptoms were not observed in the patients admitted to the alcoholic ward during the intervening time. The majority were Irish-Americans, who for the most part had always resided in Philadelphia; in addition, there were a few Poles, Russians, Italians and negroes. There were no Jews, however, which is

* From the service of Dr. Joseph C. Doane, Philadelphia General Hospital; the Laboratory of Neuropathology, and the Research Institute of Cutaneous Medicine.

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped addressed envelop.

consistent with statistics showing that pellagra is rare in the Jewish race.[1]

ALCOHOLISM

Alcoholism runs like a red streak through the case histories of these patients. The history uniformly concerned alcoholism of years' duration, with symptoms of pellagra appearing after a debauch lasting for weeks, and often months, during which time incredulous amounts of alcohol were consumed daily, and little or no food eaten, or, at most, only one type of food. The following excerpts from the histories are representative of the series: "For weeks the patient lived on wine and spaghetti." "Drank constantly for eight weeks; ate only baked beans and that irregularly." 'Steady drinker for ten years; past six months drank quart of whisky daily; ate only soup or stew."

We have not determined the percentage of patients admitted to the alcoholic ward who had symptoms of pellagra. In the midsummer months, however, it was not unusual to observe one or two among a total of from ten to fourteen patients. There is a rapid turnover of patients in this ward. Some with pellagra had previously been admitted to the hospital because of acute alcoholism. Not all of them, however, showed evidence of pellagra at the time of a prior admission. In a few, symptoms of pellagra appeared each summer for a number of years. In some it was noted that although the patient continued to drink, there was no clinical recurrence of the disease.

Three patients with pellagra were observed who did not give a history of alcoholism. One patient had inoperable carcinoma of the stomach.[2] He ate little and vomited most of what was eaten. There was considerable loss of weight. Symptoms of pellagra appeared, manifesting themselves as cutaneous lesions, lesions of the mouth and tongue, and diarrhea. The patient died.

Two other patients, aged 69 and 75, respectively, were inmates of a home for indigents.[3] There was no history of insufficient diet prior to protracted diarrhea, which was the onset of the illness. Whether the diarrhea preceded the pellagra and was perhaps etiologically related to it, or whether it was a symptom of pellagra, we were not able to determine.

SYMPTOMATOLOGY

In view of the type of patient considered in this study, it was not possible to obtain from all a satisfactory history as to the onset of pellagra symptoms. On admission, many were disorientated, and the desolate state of some precluded questioning of relatives. Moreover, it was not always possible to differentiate symptoms arising from alcoholism from those of beginning pellagra. In patients presently designated as belonging to group 1, the dermatitis was the conspicuous and apparently the initial symptom. In the majority, from whom a satisfactory history was possible, the dermatitis was subsequent to the following symptoms, which were the chief and initial ones: diarrhea; weakness, of varying severity to extreme prostration; dizziness; loss of weight; burning pain in stomach, mouth, throat, hands and feet; sore mouth; vomiting; cramps and "jumping sensation" in the legs; skin eruption, and at times, mental symptoms.

For convenience of presentation, the patients are placed in three groups, which are in a general way analogous to the conventional three stages of the disease. Group 1 included the mildest cases observed, characterized solely by a gloved dermatitis or the pigmentary remains of such. The dermatitis was noted only on the hands and was usually of a mild character; exceptionally, it was seen on the face and neck. There was a paucity or entire absence of somatic symptoms, which chiefly concerned diarrhea. Patients in this group were discovered only after routine examination of all patients admitted to the alcoholic ward for symptoms of pellagra. The patient invariably referred to the dermatitis as sunburn, which could on a perfunctory observation pass for such. The clinical features, however, were those of a pellagrous dermatitis, and are discussed under dermatologic symptoms. The patient shown in figure 2 is representative of this group.

Fig. 1.—The desquamating stage of a pellagrous dermatitis in a patient in group 2, who in order to lose weight became a strict vegetarian. The darkened area on the upper border of the eruption on the left foot was the site of a large bulla. Note the uninvolved areas, corresponding to the outline of the shoe strap and the upper part of the shoe; also the initial clearing of the eruption away from the periphery, the periphery involuting last, which are features of a pellagrous dermatitis. This patient also presented a gloved dermatitis.

The patients in group 2 presented a dermatitis of the hand (figs. 3 and 5), and in addition many presented other cutaneous lesions, as discussed under dermatologic symptoms. In these patients there were frank somatic symptoms, characteristic of pellagra-diarrhea; mouth and tongue lesions; weakness, and, in addition, perhaps mental or neurologic symptoms. Diarrhea was usually severe, continuing unabated for weeks. It was very recalcitrant to treatment. Involvement of the tongue and mouth was present to a varying degree. In some, the tongue alone was involved. It was smooth and at times fissured, and the color of raw beef, or quite red,

1. Wolff, B.: Are the Jews Immune to Pellagra? South. M. J. **5**: 116-124, 1912.

2. Similar instances have recently been reported by Bender, W. L.: Pellagra Secondary to Lesions of the Stomach Interfering with Nutrition, J. A. M. A. **84**: 1250-1253 (April 25) 1925, and by Nuzum, F. R.: Pellagra Associated with Annular Carcinoma of the Terminal Portion of the Ileum, ibid. **85**: 1861-1862 (Dec. 12) 1925, and by others.

3. Blandy (A Contribution to the Study of Pellagra in England, Lancet **2**: 713-717, 1913), after observing one patient with pellagra in an asylum, examined all the patients and found others with the disease.

as though it had been painted. Frequently, the buccal mucosa was involved, presenting the same bright red as the tongue. Aphthous-like ulcers were not uncommonly seen on the buccal mucosa or the sides of the tongue, but they were more likely to appear around the base of the frenum. The involvement sometimes appeared as a very acute stomatitis, which interfered with eating.

The hospitalization of these patients ranged from a week to as long as four or five months. The appearance of the hands of this patient is shown in figures 3 and 4.

In group 3 were placed patients presenting grave symptoms of pellagra analogous to what is conventionally called the third stage of pellagra, excepting the acute, fulminating cases, which are here included. In these patients, severe, cutaneous and somatic symptoms of pellagra apparently suddenly developed after a prolonged debauch. In addition, there was an acute delirium, with increase of psychomotor activity, necessitating restraint, complete disorientation and auditory

Fig. 3 (case 1).—The desquamating stage of a pellagrous dermatitis of three weeks' duration. Characteristic patches were present on both elbows. The one on the right elbow is shown in the illustration. Note the vitiligoid appearance, the fringe of scaliness along the periphery of the dorsum of the left hand and the sharply marginated lesion on the right thumb.

and visual hallucinations. On admission, the diagnosis was delirium tremens. In this regard, Procopiu [4] pertinently remarks that the acute mental symptoms of pellagra are more frequent when the pellagra is associated with alcoholism, in which event it presents the characteristics of delirium tremens. Lorenz [5] pointed out the resemblance of the psychosis that accompanies pellagra to the acute alcoholic psychoses.

Case 2 is representative of the acute type, many of which patients succumbed. Indeed, there was a high mortality in this group.

CASE 2 (group 3).—A man, aged 33, had begun acting peculiarly four weeks prior to admission, in June. He talked in a silly fashion, imagined that he saw things, heard voices, and had paranoid ideas. About this time his hands swelled, became red and began to peel. Prior to these mental abnormalities, he had had attacks of diarrhea, had vomited frequently, and was nauseated almost constantly. He had always been in good health. For a year previous to the onset of the present symptoms, he drank considerably, as much as fifteen whiskies and two bottles of beer each day, and for days he did not eat. When he did, it was mostly pork and beans, soup or stew, or milk and eggs.

The patient was lying in bed in restraint. He reacted to hallucinations. At times he was fearful and chattering. He twisted the sheets and tried to "drink blood" from a cup made from the edge of the sheet, and was fearful lest the examiner spill it. He was confused, irrelevant, distractible and wandering.

A severe stomatitis was present, and the tongue was beefy red. Deep reflexes were equal and exaggerated, and the pupils were normal. There was a reddish brown dermatitis covered with dry scales, involving the back of the fingers, and the dorsum of the hands and wrists. It was sharply marginated along the sides of the fingers and hands, and was about 3 cm. above the wrist on the extensor and flexor surfaces. The palms were free. There were sharply marginated patches of a similar dermatitis on both elbows and knees.

The mental symptoms disappeared in about one week after admission. The desquamating stage of dermatitis continued for about sixteen days. The involved areas then appeared deeply pigmented (fig. 8). Diarrhea continued for about six weeks. The patient was finally discharged in good condition.

Eighteen months after discharge, the patient was examined in the skin clinic. He was drinking daily but not excessively; there had not been any debauches, and he was working constantly. He was eating a proper diet and there had been no recurrence of the skin eruption. Pigmentation of the hands disappeared about six months after his discharge. He complained of burning pain in the toes, and sharp, shooting pains in the legs, accompanied by involuntary jerking of legs. The hands and feet were bluish red, cold to touch, and moist. The mouth and tongue were normal, as were also the pupils. Deep reflexes were exaggerated.

Other patients in this group included the demented, prostrated, moribund patients, and those who have been described as having pellagra. Case 3 concerns a patient with typhoid pellagra.

CASE 3 (group 3).—A man, aged 43, admitted July 21, had been drinking excessively for twenty years. His general health had been good until the onset of the present condition. The first symptoms appeared in May. He complained of a dull, tired feeling, with vertigo after a day's work, which gradually became worse and incapacitated him. During this time he drank considerably; during June, he had one pint of whisky daily. His appetite had been good, and he had been eating a mixed diet. Early in July, diarrhea appeared, with from four to five daily movements. About this time a burning sensation appeared in the mouth and throat, and in the hands and feet, and soon thereafter the knuckles became red and blisters appeared.

The patient was prostrated, but oriented in all phases. The pupils were irregular and reacted sluggishly to light; the deep reflexes were exaggerated. The tongue was red and there was an acute stomatitis. Over all the knuckles there were sharply marginated, moist, eczematous patches. The toes were similarly involved.

The patient became profoundly prostrated, dull, listless and apathetic; later, he was incoherent, irrelevant and disoriented. There was a low muttering delirium, with frequent picking at the bedclothes and spasmodic jerking of the arms and twitching of the face. Diarrhea was profuse. The stomatitis greatly interfered with eating, and there was loss in weight. There was an irregular rise of temperature, reaching a maximum of 100. The dermatitis over the knuckles desquamated, leaving pigmentary patches. The patient died, August 29, thirty-nine days after admission, and about four months after the initial symptoms.

Here the clinical picture was one of extreme prostration; a pellagrous dermatitis, or the pigmentary remains of such; or a dry wrinkled skin of the dorsum of the hands, sepia in color; stomatitis of a variable degree; persistent diarrhea; frequently, pupillary abnormalities, with increased patellar reflexes; a delirium accompanied by low mutterings; coarse muscular

4. Procopiu, G.: La pellagra **8:** 75, 1903.
5. Lorenz, W. F.: Mental Manifestation of Pellagra, Pub. Health Rep. **31:** 221-246, 1916.

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twitching of the face and hands; picking at the bedclothes, or irregular jerking movements of the extremities. In some, the temperature was elevated and irregular, the picture recalling that of a patient in the third week of typhoid, and also resembling a condition sometimes seen in delirium tremens.

Pupillary abnormality consisting of irregularity and inequality, with retarded reaction to light, was the rule in patients in groups 2 and 3. Its frequency in alcoholism is well known. Exaggeration of the deep reflexes, sometimes with a Babinski sign, were more frequently observed than absent reflexes. A very conspicuous complaint was burning of the hands and feet, at times associated with hyperesthesia, described in case 1. It is typical of the complaint in the other patients. This symptom persists for months after all other symptoms disappeared. Later there appears a vasomotor disturbance,[6] the hands and feet assuming a reddish blue discoloration

Fig. 6.—Pellagrous eruption on feet of patient shown in figure 5.

In one patient, in whom the hands and feet presented a desquamating stage of a pellagrous dermatitis, the toes were black, a beginning gangrene. This, with somatic symptoms, and burning pains in the hands and feet, resembled chronic ergotism. Primary optic atrophy was present in three patients. Here, as elsewhere, it was difficult to determine whether the symptoms were due to pellagra or to alcohol. Optic neuritis was also noted, as well as diplopia. Other neurologic symptoms noted were diminution of tactile sensibility, tremors, cramplike pains in the legs, choreiform jerking of the arms, and convulsions.

DERMATOLOGIC SYMPTOMS

All patients showed cutaneous lesions of pellagra, variously manifested and distributed. Atypical and sparing lesions were observed and will be discussed later.

The conspicuous lesion was the classic pellagrous dermatitis, involving the hands (figs. 3 and 5). This was most frequently seen in the desquamating stage, since patients were admitted after the initial erythema disappeared. Many, however, referred to the erythema as "sunburn," and some stated that the hands became swollen and blistered.

The dermatitis was symmetrical, and sharply marginated along its entire periphery, and covered with fine adherent gray scales, which were not profuse. The color varied somewhat with the duration of the eruption. In the more recent ones, it was reddish brown, the red predominating. Later the brown became the predominating color, and varied from a light to a dark tone (contrast figs. 9, 1 and 3). The skin was dry, rough and nonpruritic. In the desquamating stage, the demarcation of the eruption was frequently represented by a scaly line, in which the epidermis was raised and sometimes slightly undermined (figs. 1 and 3). The desquamating stage continued for some weeks. Involution first appeared away from the periphery, as shown in figure 1. The periphery was the last to involute, finally appearing as a fringe of scaliness.

So-called wet dermatitis was noted in only a few patients. The surface was moist, bathed with serum or seropurulent fluid, and around the periphery there were tags of loose raised epidermis. This form resembled eczema of the type called infectious and also dermatitis repens.

Bullous lesions were observed in only four patients.

We have not observed the lesions designated by Majocchi[7] as erysipelatous, erythematopapular, follicular and hemorrhagic.

Figure 7 is representative of the skin changes in chronic cases. This patient experienced a recurring dermatitis of the hands and feet each spring for twenty years. Mental symptoms were conspicuous and were the cause of admission.

PIGMENTATION

At the termination of the desquamating stage, the involved part was pigmented, dry and easily wrinkled (fig. 8). The degree of pigmentation varied considerably (figs. 3, 5, 7, 8 and 10). The pigmentation and the prostrated condition of these patients suggested Addison's disease.[8]

Pigmentation persisted for months (fig. 8), and was usually seen on parts previously involved by the pellagrous dermatitis—the hands, feet, elbows, face and areas on the body. In addition, it was seen on the genitalia, nipples and axilla, and was regarded as of diagnostic significance. In some of the patients in

Fig. 7.—The hands of a chronic pellagrin. The patient, a chronic alcoholic addict, experienced a recurring dermatitis of the hands and feet, each spring, for twenty years. The photograph was made in July, and shows pellagrous dermatitis in the desquamating stage. The skin was moderately pigmented, dry, rough, atrophic and easily wrinkled, with loss of elasticity. The loss of elasticity is evident in the way the skin is raised at the base of the fingers.

6. There is much evidence of involvement of the sympathetic nervous system in pellagra.

7. Majocchi: Interno alla diagnosi delle forme cutanee della pellagra, Atti d. cong. pellagrol. ital. Udine, 1902, pp. 342-343.

8. The simulation of Addison's disease by pellagra, the fact that pigmentation so commonly occurs in the disease, suggests a pathologic involvement of the suprarenals. Indeed, such involvement has been reported.

group 3, pigmentation, variable in extent, was the only cutaneous evidence. One patient seen on a previous admission with a pellagrous dermatitis was later admitted with grave constitutional symptoms of pellagra. The only cutaneous symptoms were pigmentation of the genitalia, nipples and axilla. Pigmentary

Fig. 8 (case 2).—Pigmentation seven weeks after onset of pellagrous dermatitis. Pigmentation disappeared in about six months. The hands became reddish blue, similar to those shown in figure 4.

patches over both elbows suggest diagnosis in doubtful cases and should always be sought for, especially in so-called cases of pellagra sine pellagra.

Vitiligo [9] was observed in the late desquamating and pigmentary stages of the dermatitis (figs. 3 and 10). The nonpigmented areas were rose or pink and were surrounded by a hyperpigmented area. Similar changes have been described by Merk and others.

Following the disappearance of the pigmentation on the hands, or hands and feet, these parts sometimes assumed a reddish blue discoloration corresponding to the original eruption (case 1 and fig. 4). The part was cold to the touch and moist, particularly the palms.[10]

LOCALIZATION OF THE DERMATITIS

The most frequently involved areas in our series, in the order of their involvement, were the hands, forearms, face, neck, feet, elbows, body and knees. The dermatitis involved only the dorsum of the hand or, in addition, the entire posterior surfaces of the fingers, or the eruption spared the last two phalanges. Exceptionally, the dorsum was free, the fingers alone involved, or only the knuckles. Usually the dermatitis sharply terminated from 3 to 4 cm. above the wrists on the posterior surface (figs. 5 and 8), and sometimes extended bandlike across the flexor surface. A variable portion of the forearm was involved, extending from the wrists to the elbows, and even beyond (fig. 9). Usually only the extensor surface of the forearm was involved, the eruption being sharply marginated along the borders of the flexor surface.

Other than fissuring, involvement of the palms and palmar surfaces of the fingers was not observed. Involvement of the face and neck was commonly observed, but never independently. The facial involvement was always of the diffuse type (figs. 9 and 10), forming the so-called pellagrous mask. In a few instances the forehead was conspicuously involved. The "spotted" and "butterfly" types of involvement were not observed. The facial involvement was usually accompanied by a broad band across the neck—Casal's necklace; at times, with an extension on the manubrium —Casal's necktie (figs. 9, 10 and 11).

Dermatitis on the feet was likewise common, usually confined to the dorsum (fig. 1); exceptionally, it involved the toes. The involvement of the feet, in the manner shown in figure 6, was atypical in our series. The soles of this patient were also involved, which was unusual.

That the sun plays some rôle in the localization of the dermatitis is generally recognized. Such an instance is shown in figure 1. Similar instances showing a relationship have been reported.

Among the atypical lesions mentioned by Merk [9] are those on the shoulders, perianal region, elbows, forearms, knees and scrotum. So frequently were the forearms and elbows the site of the dermatitis in our series that we did not regard such lesions as atypical. Lesions on the elbows were seen as discoid patches (fig. 5). Similar patches were seen on the legs and trunk of some patients. A bootlike involvement of the legs

Fig. 9.—Pellagrous dermatitis in the erythematous stage. It was reddish brown, the red predominating. The feet were involved, like those shown in figure 1. There were also patches of dermatitis on both legs. The eruption appeared in August, during a debauch, in which little food was eaten, and was apparently precipitated by exposure to the sun. Stomatitis, diarrhea, burning hands and feet, weakness and delirium were additional symptoms of pellagra. One year later, the patient was admitted for delirium tremens, without symptoms of pellagra. Two years later, a reddish blue discoloration of the hands with a burning sensation were the only symptoms.

was present in only one patient. Since the scrotum was examined as a routine, scrotal lesions were observed not to be rare.

9. Ludwig, Merk (Die Hauterscheinungen der Pellagra, Innsbruck, 1909) regards vitiligo, solar erythema, eczema and erythema exudative multiforme as the most likely skin diseases to be confused with pellagra. Acrodynia could appropriately be added to the list.

10. Although this symptom has been common in our series, we found only one instance in which other writers mention it; namely, Maria: Pellagra, translated by Lavinder and Babcock, 1910, p. 173.

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Dermatitis of the vulva and adjacent region associated with vaginitis was observed. Saunders [11] found such lesions constantly present in a large number of patients studied.

ALCOHOLISM AND PELLAGRA

Alcoholism and dietary insufficiency are conspicuous in the history of pellagra. The rôle of alcoholism was mentioned in the original reports of Casal in 1762. Nobili [12] in 1841 attributed pellagrous attacks to abuse of wine. The Piedmont Commission (Italy, 1847) noted frequently the coincidence of pellagra and alcoholism. From observations in Spain, Calmarza [13] advocated the view that pellagra is a disease produced by misery and alcohol. Lombroso [14] believed that most if not all of the alleged pellagra in Spain was of alcoholic origin. In France, Leudet [15] records observations showing the relationship between alcoholism and pellagra. In brief, alcoholism is mentioned in all extensive reports in the enormous literature on pellagra. The following more recent observations in this regard are pertinent: Zanon [16] records alcoholism to the extent of 57.7 per cent in 676 pellagrins in Italy. He says that where much alcohol is drunk, the men with pellagra exceed the women in number. From observations in North Carolina, Wood [17] remarks that alcohol is a decided predisposing cause of pellagra, and in his series it was the rule for male patients to be alcoholic. "The pellagrous condition seems to be affected in a specially malign manner by alcohol, especially in the form of whisky, and it has been frequently noted that hard drinkers almost invariably run a speedy and fatal course" (Niles,[18] Georgia, 1916).

From Shattuck's [19] studies of pellagra in Massachusetts, he concludes that alcoholism has some etiologic import in a considerable proportion of the patients.

Pellagra in Cuba, as observed by Pardo-Castello and Mestro,[20] has occurred mostly in chronic alcoholic addicts. Their case records of pellagrous patients are replicas of the ones herein reported, excepting that the disease appeared in all seasons.[21]

Relevant to the relation of alcoholism and pellagra is the report of Olozoga,[22] who concludes that the disease known in Colombia as chichism is the result of abuse of the cheap native beverage known as chicha, made from maize. He presents evidence to demonstrate that this chichism is in reality pellagra, developing in consequence of the toxic action of the chicha, analogous to poisoning from ergot, the chick pea and buckwheat.

It appears that chronic alcoholic patients are potential pellagrins, and are more susceptible to pellagra following an insufficient diet than those who are not addicted to alcohol. In this regard it is interesting to note that Niles,[23] in discussing the prognosis of pellagra, writes: "Probably the most dangerous indulgence is that of strong drink. Alcoholic beverages, unless in the smallest and most attenuated form, are poisonous to pellagrins."

The conclusion seems warranted that alcoholism in many instances plays some rôle, either predisposing or etiologic, in the causation of pellagra. The importance of this rôle has apparently not been generally recognized.

PSEUDOPELLAGRA

In that epoch in the history of pellagra when the zeist theory of the cause of the disease was generally

Fig. 10.—Pigmentary stage of a pellagrous dermatitis resembling vitiligo. Gloved area of pigmentation on hands. Dermatitis appeared during a debauch of eight weeks, in which little food was eaten.

accepted, Bouchard,[24] Landouzy [25] and Billod [26] independently published a compilation of cases to prove that there is a peculiar form of pellagra that has no etiologic association with the eating of maize.[27] The champions of the maize theory, notably Lombroso and Roussel, strongly opposed this view. The supposed pellagra, unassociated with the eating of maize, had

11. Saunders, E. B.: The Gynecological, Obstetrical and Surgical Aspects of Pellagra, N. Am. Medico-Psych. A. **18:** 289-298, 1911.
12. Nobili: Della Pellagra, etc., Milan, 1841.
13. Calmarza: Memoria sobre la pellagra, Madrid, 1870.
14. Lombroso, C.: La quistione della pellagra in Ispagra, Rend. d. R. Ist. Lomb. **4:** 175-185, 1871.
15. Leudet: Recherches pour servir a l'histoire de la pellagra sporadique et de la pseudo pellagra des alcoolisés, Etudes de path. et de clin. méd. Paris **3:** 295-319, 1891.
16. Zanon: Alcoolismo e pellagra, etc., Atti d. Quarto cong. pellagrol. ital., 1909, pp. 175-184.
17. Wood, E. J.: A Treatise on Pellagra, New York, D. Appleton & Company, 1912, p. 73.
18. Niles, G. M.: Pellagra, ed. 2, Philadelphia, W. B. Saunders Company, 1916, p. 129.
19. Shattuck, G. C.: Factors Apparently Influencing the Development of Pellagra in Massachusetts, Boston M. & S. J. **188:** 889-891 (June 7) 1923.
20. Pardo-Castello, V., and Mestro, J. J.: La Pelagra en Cuba Rev. méd. Cubanas, July, 1926.
21. Personal communication to the authors.
22. Olozaga, G.: Alcoholism and Pellagra, Repert. de med. y cirug. Bogotá **12:** 86-98 (Nov.) 1920; **12:** 143-162 (Dec.) 1920.
23. Niles, G. M.: Pellagra, ed. 2, Philadelphia, W. B. Saunders Company, 1916, p. 181.
24. Bouchard: Recherches nouvelles sur la pellagra, Paris, 1862.
25. Landouzy, H.: De la pellagre sporadique, Paris, 1860.
26. Billod, E.: Traité de la pellagre, ed. 2, Paris, 1870.
27. It is interesting to note that Nicolas and Jambon (Pellagre, Ann. de dermat. et syph. **9,** 1908) distributed the incidence of pellagra among three classes: those who eat corn; the insane, and alcoholic addicts.

nothing to do with pellagra. These cases were designated pseudopellagra [28] by Roussel.[29] The term includes "sporadic pellagra," "pellagra of the insane" and pellagra appearing after alcoholism, also called "ethylic dermatitis." [30]

Since the zeist theory of pellagra is no longer tenable, the term pseudopellagra as originally employed is an anachronism. This forcefully applies to the term alcoholic pseudopellagra to describe the condition herein reported, appearing after alcoholism, in which the symptomatology of pellagra is present in addition, as we have shown, to the pathologic picture of pellagra in the nervous system.

The term pseudopellagra or, what is preferable, pellagroid, could appropriately be applied to the following conditions: the pellagra-like eruption resulting from large doses of sulphonethylmethane or sulphonmethane, as described by Thomas,[32] developing on the hands, wrists and face, accompanied at times by diarrhea and emaciation. It is interesting to recall here that these drugs produce hematoporphyrin. In this way, it is possible experimentally to photosensitize animals.

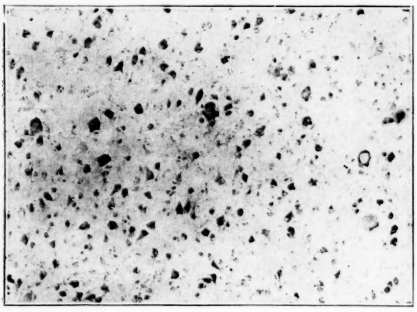

Fig. 14.—Ganglion cell changes in the motor cortex.

Although no photosensitizing substance has been isolated in pellagrous patients, there is much evidence to show that such a substance is formed. It is known that photosensitizing substances are produced from certain diets as, for example, buckwheat.

Exceptionally, eczema involving the exposed parts of the body may appear pellagroid.

Moreover, there are certain diseases that present pellagroid symptomatology as, for example, ergotism from rye, lathyrism from chick peas, and acrodynia. Such pathologic conditions have a place in the etiologic consideration of pellagra, and support somewhat the view of certain French writers who maintain that pellagra is not a morbid entity, but speak of it as the pellagrous syndrome and regard it as a morbus miseriae.

28. To Roussel's opponents, pseudopellagra connoted "pellagra without maize." This was not, however, Roussel's definition, as is frequently stated. Sir Patrick Manson aptly remarks that "the disease is pellagra when it fits in with the orthodox theory and when it can be connected in any way with maize; but when this is not possible, the disease becomes pseudopellagra."

29. Roussel, T.: Traité de la pellagre et des pseudo pellagres, Paris, 1866.

30. Much has appeared in the literature on pellagra relative to "ethylic dermatitis" and its differential diagnosis from pellagra. Although we have observed skin diseases and various cutaneous disorders in alcoholic patients, we are unacquainted with a skin disease meriting the appellation ethylic dermatitis. The only distinctive skin disease that we observed among such patients is that herein reported as pellagra. Sambon regarded "ethylic dermatitis" as pellagra in alcoholic patients. However, the term "alcoholic pseudopellagra" is still in common usage.

32. Thomas, W. R.: Pellagra and Drug Intoxications, Lancet **2**: 842, 1913.

EXPERIMENTAL STUDIES

We failed to transmit pellagra to a monkey injected with the blood and spinal fluid of patients with pellagra, supplemented by a minimum diet and the ingestion of alcohol.[33]

PATHOLOGY OF THE NERVOUS SYSTEM

The most universal condition found in the brain of pellagra patients is a ganglion cell change that goes under the name of "retrograde degeneration." This condition of the ganglion cells was first described by Nisel in 1890, in the nucleus of the fifth cranial nerve after avulsion of the roots of the trigeminal nerve in its peripheral portions. In brief, this change in the nerve cells has the following characteristics: The cell body is rounded out and swollen, having lost its normal angular outline (figs. 13 and 14). The Nissl bodies, or stainable portion of the cytoplasm, have to a great measure disappeared, traces of them being present only around the cell margins. Finally, and most characteristically, the nucleus, instead of occupying the center of the cell as it does normally, is definitely eccentric, at times being partially extruded from the cell body. The fibril stains show clumping together of the neurofibrils, but usually no destruction.

This condition of the ganglion cells, characteristic of retrograde degeneration, such as would occur after a cutting through of the axis cylinders of the nerve cells, has been found in various conditions. It was originally described by Adolph Meyers [34] in several patients with senile melancholia. To this condition he gave the rather poorly chosen name of "central neuritis," implying a neuritis of the axis cylinders of the cortical elements as the basic change. This, however, has not been substantiated; in fact, changes in the axis cylinders are far from conspicuous.

In our laboratory, in a routine examination of more than 2,000 cases in the last seven years, we have found the so-called central neuritis in a multitude of conditions, in isolated instances, both neurologic and psychiatric. Only in the two following conditions has it been a uniform observation: 1. In pellagra it has been noted in every case examined histologically—a total of eleven cases. 2. In alcoholism, especially during the acute stage of delirium tremens, it has been found so often that it is placed beyond the realm of "accidental observations."

In view of the clinical facts of the relation between alcoholism and pellagra, we reviewed some of the cases diagnosed "acute alcoholism" and were not surprised to find that, in many, a dermatitis of the backs of the hands was noted in the physical examinations, although apparently little significance was accorded such a condition.

The complete pathologic syndrome, described by one of us [35] in 1926, consists of the following: (1) retrograde cell change not only in the spinal cord, but in the cortex as well; (2) increased lipoid content throughout the entire central nervous system, and (3) thickening and hyalinization of the walls of the small vessels in both brain and spinal cord.

The complete pathologic picture was not found in the cases of uncomplicated alcoholism, especially the

33. Details of the experiment appeared in the Transactions of the Section.

34. Meyers, Adolph: Am. J. Immunity **54**: 221, 1897.

35. Winkelman, N. W.: Ztschr. f. d. ges. Neurol. u. Psychiat. **102**, 1926.

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acute cases, the missing elements usually being, first, the changes in the vessels, and, secondly, the increased lipoid.

From a pathologic point of view there is apparently an intimate association between alcoholism and pellagra, especially in view of the fact that in other conditions in which alcohol is a factor, e. g., tuberculosis, similar pathologic conditions are absent.

In conclusion it is interesting to note that the pathologic manifestations of pellagra are not inflammatory, but resemble what is seen in toxic states with known etiology.

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ABSTRACT OF DISCUSSION

DR. HOWARD FOX, New York: In order to throw more light on the relationship of pellagra to alcoholism, I have recently searched the medical records of Bellevue Hospital (services of Drs. Norrie, DuBois, Carlysle and Lambert) I found that from 1914 to the present, a definite diagnosis of pellagra had been made in thirty-seven cases. In some others, this disease was mentioned as a possibility. Of the thirty-seven definite cases, twenty-two were in males and fifteen were in females. All the patients were white and of an average age of 42. The patients were principally laborers or housewives, and the duration of the disease varied from a few days to one year. Twenty of the patients were addicted to alcohol, fifteen of them being heavy drinkers of whisky or gin. In five cases, alcoholism was moderate. In other words, of the thirty-seven patients, 54 per cent were heavy or moderate drinkers of alcohol.

DR. J. FRANK SCHAMBERG, Philadelphia: When Dr. Klauder showed me some of his pictures, I was at first dubious about the diagnosis, but I think that he has presented the subject in a convincing manner. I saw other cases with him afterward which I would regard as being true pellagra. The real question is, What relation does alcohol bear to pellagra? Does it produce the disease through deprivation of food or a balanced diet, by reason of the anorexia and digestive upsets caused by alcoholic debauches, thus confirming the assumption of a deficiency disease, or does the alcohol produce an effect on the nervous system resulting in pellagroid symptoms? I had an opportunity yesterday of seeing some of the animals that are under experimental investigation by Dr. Goldberger. I can testify to the painstaking and carefully scientific manner in which Dr. Goldberger is carrying on his research in pellagra. The lesions produced in the dog were highly suggestive of the lesions seen in the mouths of patients with pellagra. He believes that they are induced by withholding what he calls factor P, which may be concerned in the production of pellagra. Dr. Goldberger also showed me some rats with lesions of the oral commissure which he regarded as being induced by a dietary treatment of this character.

DR. EVERETT S. LAIN, Oklahoma City: I feel great embarrassment in taking issue with the authors' conclusions. They have, perhaps, much more ability to do the research work than myself, though I do not concede to them an experience so much greater than that of those of us who come from the South and who have the opportunity of observing clinically quite a large number of cases of pellagra. Dr. Goldberger recently made a survey of pellagra in my state. According to him, pellagra is more common in children and in early adult life. In such instances alcoholism has not yet developed, even though the patients have had the opportunity. For a long time, it has been observed and demonstarted that pellagra is more frequent in the poorer districts of the Southern and Middle states where a variety of foods rich in so-called vitamins are not consumed. I wonder whether the part alcoholism plays in pellagra is not an economic rather than a direct factor in its etiology. It has previously been observed that pellagra is not uncommon in alcoholic addicts, in tuberculous patients and in those who are suffering from late cancer. Throughout the South, and in Oklahoma, in certain somewhat impoverished districts, where the people have taken the Volstead Act more seriously than in other states, pellagra in spring and summer is a most common disease. These observations, and those made by Dr. Goldberger and others, refute the conclusions drawn by Dr. Klauder.

DR. EARL D. CRUTCHFIELD, Galveston, Texas: The fact that Dr. Klauder has seen these types of cases in the northern part of the United States is very interesting, because these are the types which we encounter in the South. That there are different types and grades of pellagra has, I think, been recorded all over the country. The symptomatology of these patients has been typical all over the country. Those cases which have been referred to as being atypical were true examples of pellagra of a type different from the usual form. In regard to the relationship between alcoholism and pellagra, I think that is one of the strongest supports for Goldberger's works on pellagra. I started several years ago on this work, believing that pellagra was an infection, as do most physicians in the South, but now I have a different view. We know that pellagrous patients are not all alcohol addicts, but I think that Dr. Klauder has shown that alcohol is one of the exciting factors in the development of pellagra. This all points to the theory Goldberger has elucidated, namely, that pellagra is a deficiency disease. If a man drinks a quart of alcohol daily, we know that his nutrition will be interfered with. It is impossible to nourish an alcoholic addict properly, just as it is impossible to nourish an insane patient. Regarding paresthesias, I believe that they are a part of the pellagrous condition, just as in patients with cachexia. We see all kinds of paresthesias, which are probably due to the anemia, but there may be some actual involvement of the nerves which accounts for them.

DR. JOSEPH N. ROUSSEL, New Orleans: It has been our experience in New Orleans and the surrounding territory that most patients live either out of the bottle or out of tin cans, for nearly all of the pellagra in our territory comes from the large sawmill districts where these patients live entirely on canned food. Most of the managers of these places have told me that one of their greatest difficulties was to get rid of this canned food. I have always taken the position that pellagra is a type of land scurvy. With that in mind, we have given these patients lemon juice, and most of them get well very promptly under this treatment. We never give them anything else. When the patients with pellagra have once taken to bed, it does not matter what one gives them; they will never come back. However, five or six lemons a day will cure the average patient with pellagra in a very short time.

DR. J. B. SHELMJRE, Dallas, Texas: I should like to ask those who believe that the unbalanced diet is the causative factor in this disease why, during and after the Civil War, when the people all lived on a poorly balanced diet, it was not until 1907 that pellagra developed. I practiced medicine for twenty-five years in Louisiana and Texas before ever seeing a case of pellagra. I saw and diagnosed the first case seen in Dallas in 1908. I should like to know why the disease did not develop before that time if it is due to an unbalanced diet. If any one can answer that question satisfactorily, I may believe in the unbalanced diet theory.

DR. JOSEPH D. KLAUDER, Philadelphia: We do not wish to convey the impression that we believe that all pellagrins are chronic alcohol addicts. The rôle of alcoholism in the causation of pellagra is stressed by many writers. Such a rôle doubtless intimately concerns the dietary insufficiency incident to an alcoholic debauch or to prolonged alcoholism. This rôle was operative in all our cases. Our colleagues in the South inform us that alcoholism is not conspicuous as a causative factor among the pellagrins in the Southern states. On the other hand, many of our colleagues in the larger cities of the Northern states inform us that most of the pellagrins they see are alcoholic addicts. Apparently, pellagra, as it exists in the North, arises through the concentration of an important predisposing cause, namely, alcoholism. Other factors that lead to dietary insufficiency are apparently less operative in the Northern states than in the Southern states.

OXYGEN THERAPY *

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AND
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ROCHESTER, MINN.

Haldane,[1] from his investigations on carbon monoxide poisoning and other forms of oxygen deficiency, early recognized the dangers of anoxemia, especially its serious effect on the central nervous system, and called attention to many associated clinical conditions in which the administration of oxygen would be beneficial and even life-saving. During the World War he developed a portable apparatus for the administration of oxygen which was efficient in the treatment of gas casualties and also was manipulated with reasonable comfort to the patient.

Barcroft,[2] in conjunction with his associates Hunt and Dufton, constructed three oxygen chambers in the physiologic laboratory at Cambridge, and by means of these studied the effect of prolonged oxygen treatment. Their patients were not as a rule dangerously ill but were suffering from the milder and more chronic types of disease. They were particularly interested in studying the effect of additional oxygen on the physiologic mechanism of respiration and the blood dissociation curves, and have published several valuable reports, all indicating the dangers of oxygen deficiency and the benefits of oxygen administration in such cases.

Under the direction of the late Dr. G. H. Hunt, who had been associated with Barcroft in the construction of the oxygen chambers at Cambridge, another somewhat similar chamber was built at Guy's Hospital, London, for the study of more severe cases. The reports of the investigations made at Guy's Hospital have been greatly delayed by the unfortunate death of Dr. Hunt. Recently the use of this chamber was resumed, and preliminary reports of the work have been made by Campbell and Poulton.[3] The cases so far reported deal with the milder types of disease associated with chronic bronchitis; the study has yielded many valuable physiologic data.

Stadie,[4] and later Binger,[5] built an oxygen chamber at the Rockefeller Hospital, and recently Barach [6] built one at the Presbyterian Hospital in New York; the reports from both institutions indicate that oxygen is a valuable therapeutic agent in most disorders associated with anoxemia. In some of their severe cases of pneumonia with cyanosis, the administration of oxygen was undoubtedly a life-saving procedure. We are indebted to Binger and to the authorities of the Rockefeller Hospital for their kindness in permitting us to use the plans of their chamber and for much helpful advice in the construction of our chambers.

The underlying physiologic principles of oxygen therapy have been dealt with extensively by Haldane [7] in his book on respiration, by Lundsgaard and Van Slyke [8] in their monograph on cyanosis, and recently more briefly by Greene.[9] The anatomy of the lungs with the relationship between the air passages and the alveoli has been clearly portrayed by the reconstruction models of Miller.[10] He has shown that the ordinary fine bronchi divide into "respiratory bronchi" and these in turn into "alveolar ducts," both of which are partly lined with alveolar epithelium; the alveolar ducts open into distributing chambers called atria, from which arise several "air sacs." Although the greater part of the alveoli correspond to the air-sac system and are reached last by the air current, a certain proportion of the alveolar type of epithelium with its capillary supply lines the smaller air passages. It is evident, therefore, that the blood circulating in the close network of capillaries behind the alveolar epithelium lining the air passages will be better aerated than that circulating behind the epithelium lining the air sacs. The development of slight edema in the walls of either the very fine ducts or the alveoli, even before there is any excretion of fluid into bronchial or alveolar spaces, will somewhat impede the passage of air in and out of the deeper air sacs as well as decrease the rapidity of diffusion of oxygen through the alveolar and capillary walls for oxygenation of the hemoglobin; as the edema increases and exudes into the alveolar spaces and bronchi, the diffusion of oxygen inward encounters still further difficulty, and many large groups of air sacs are imperfectly aerated. In the early stages of pneumonia, before consolidation takes place, the usual amount of blood will pass through the capillaries of the imperfectly aerated alveoli, greatly reducing the average oxygen saturation of the arterial blood; after the process has proceeded further the pressure of the exuded fluid and still later consolidation will compress the capillaries and greatly decrease or almost abolish the flow of blood through the unaerated alveoli and, therefore, the average arterial blood will be less desaturated than in the earlier stages. As pointed out by Meakins,[11] this progressive decrease in the blood supply to the unaerated alveoli accounts for the clinical observation that frequently the degree of cyanosis in pneumonia becomes less marked as consolidation increases.

A consideration of these facts in conjunction with a study of the blood dissociation curves of oxygen and carbon dioxide and the mechanism of the regulation of respiration, the details of which we must pass over, shows that the anatomic features described do not materially affect the elimination of the carbon dioxide

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* From the Sections on Clinical Metabolism and Internal Medicine, Mayo Clinic and the Mayo Foundation.

Read before the Association of American Physicians, Atlantic City, N. J., May 2, 1927.

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and its tension in the arterial blood but do greatly decrease the average oxygen saturation of the hemoglobin. Stadie has shown that cyanosis of the finger nails and lips that can just be detected corresponds to approximately a 10 per cent oxygen desaturation. When cyanosis is definite the blood will be approximately 15 per cent desaturated, and when it is marked the blood will be more than 20 per cent desaturated. In judging the intensity of the anoxemia the clinician must be on guard not to overlook the serious significance, even when apparently slight, of the steel-gray or ashen type of cyanosis that occurs in cases in which the quantity of blood in the peripheral circulation is decreased, as in "surgical shock" and collapse, or in cases in which the hemoglobin itself is reduced, as in anemia. The clinical recognition of slight degrees of cyanosis is often aided by having the patient sit up in bed, as this exertion increases the oxygen utilization and, therefore, the venous desaturation. The determination of the oxygen saturation of the arterial blood gives, of course, an exact mathematical estimation of the intensity of the anoxemia, and is therefore an exceedingly valuable procedure in investigative work. Such determinations, however, are impracticable as a routine, and fortunately are not necessary for the efficient selection and treatment of patients who may need oxygen if Stadie's approximations are kept in mind.

In spite of the well demonstrated physiologic advantages of oxygen treatment, there is too little clinical evidence as yet available to prove that the administration of oxygen will materially benefit and much less save the patients in those instances in which it is indicated. In consequence, during the last year and a half we have selected for treatment, so far as possible, cases of postoperative pulmonary edema and bronchopneumonia in which cyanosis indicated the existence of anoxemia. In many instances treatment was delayed until, without the aid of the oxygen, the outcome would have been extremely doubtful. In certain cases it was necessary to treat patients moribund from other causes and in whom pneumonia with its attendant anoxemia was merely the terminating factor.

Early in our series of cases it was discovered that in many instances there was a characteristic drop of from 2 to 5 degrees in temperature within from six to twelve hours and beginning shortly after the patient was admitted to the oxygen chamber. Such a reaction was most marked in patients with pulmonary edema and marked cyanosis before the pathologic lesion had progressed to frank pneumonia and before the toxin of the infectious process was paramount. We believe that this characteristic effect of oxygen in lowering the temperature when the patient is cyanotic has not been previously clearly recognized, although its possibility could almost be predicted from Haldane's observation that the temperature is frequently extremely labile in individuals suffering from the anoxemia of carbon monoxide poisoning; it occurred in at least one of the cases reported by Stadie, but its significance was apparently unnoted. This temperature effect is well illustrated by the following case:

CASE 1.—A woman, aged 42, had chronic bronchitis with extensive bronchiectasis and pulmonary fibrosis of long standing causing continuous cyanosis during the six months prior to admission. She entered the oxygen chamber, July 31, during an acute exacerbation of respiratory infection with accentuated cyanosis. The cyanosis cleared up immediately and the labored breathing disappeared. There was striking subjective improvement, accompanied by a rapid drop in the temperature and pulse rate. August 5, the oxygen tension in the chamber was lowered to that of room air, but as the patient became very cyanotic the oxygen tension had to be again increased at the end of an hour. This period of cyanosis was so short that the temperature and pulse rate rose only slightly. August 7, the patient was removed from the chamber and immediately became cyanotic and extremely dyspneic; a stuporous condition developed, and the pulse rate and temperature rose rapidly. After eight hours the patient was readmitted to the oxygen chamber in an apparently serious condition and irrational. Again there was a rapid subsidence of the temperature, which had risen to 104 F., with rapid fall in the pulse rate and marked subjective and objective improvement. The next day a decrease in oxygen tension to 25 per cent caused another elevation of the temperature, which decreased again when the oxygen concentration was raised to more than 35 per cent. The last attempt at removing the patient from the oxygen chamber was made August 21, after several days of normal temperature. During the previous three days the oxygen tension had been gradually lowered to about 30 per cent without demonstrable ill effects; however, when the chamber was opened, cyanosis developed immediately; the patient became stuporous, and the temperature and pulse rate rose. After eight hours, to prevent immediate death, it was necessary to raise the oxygen tension to a point that controlled the cyanosis. The obvious cyanosis was controlled when the oxygen was between 25 and 30 per cent, but the temperature did not fall until the tension was raised to about 40 per cent. When the oxygen tension again decreased to about 25 per cent there was immediate cyanosis and elevation of temperature and pulse rate, which this time was not controlled by elevating the percentage of oxygen, as the patient rapidly collapsed and died.

Besides clearly demonstrating the effect of oxygen in controlling the temperature caused by anoxemia, this case and several similar ones have taught us that in selecting patients for oxygen treatment one must always be fearful of the patient with chronic cyanosis, because the compensatory changes in the blood which have had time to develop by the gradual progress of the disease can be rapidly lost. Consequently, it may prove difficult or even impossible to remove such patients from the chamber without causing an attack of acute "mountain sickness," which in their debilitated condition they cannot survive. Only those patients with chronic cyanosis should be chosen in whom a definite improvement in the underlying pathologic lesion or in functional capacity can be hoped for during the period of relief afforded by oxygen. Patients with cardiac decompensation will therefore be benefited, provided they are in a stage of acute exacerbation resulting in pulmonary congestion and edema. In such a condition there is superimposed on a slight cardiac cyanosis an additional pulmonary cyanosis as a result of the incomplete oxidation of the blood as it passes through the lungs. While the latter is being relieved by oxygen there will be time for the heart, as a result of the use of appropriate measures as well as the direct benefit from carrying on its work with a normal supply of oxygen, to regain its compensation and by the resulting improvement in circulation to relieve the cyanosis that was due to the previous cardiac insufficiency, at least while the patient is at rest. The following case is illustrative of this group:

CASE 2.—A woman, aged 45, entered the hospital in the severe crisis stage of exophthalmic goiter, with auricular fibrillation, cardiac decompensation and generalized anasarca, and consolidation of the left lower lobe. She was irrational, cyanotic and dyspneic. She improved slightly on compound solution of iodine (Lugol's solution). Marked and immediate improvement followed her entrance to the oxygen chamber, which continued throughout the following week with a decrease but not disappearance of the edema and a fall in the pulse

rate from between 180 and 200 to 100. On removal from the chamber, the patient could breathe easily while at complete rest but still became cyanotic on moving in bed (chart 1).

The following cases are further examples of the beneficial influence of oxygen treatment as indicated by decrease in temperature. Some of the patients had a slight rise in temperature after removal from the chamber, further confirming the beneficial effect of oxygen.

CASE 3.—A man, aged 46, had moderately severe exophthalmic goiter with a basal metabolic rate of + 60 and + 68, which decreased to + 33 after the administration of compound solution of iodine. Following thyroidectomy, the temperature rose gradually to 104 on the afternoon of the third day, with development of pulmonary edema and marked cyanosis but no consolidation; the pulse rate was only moderately elevated. Immediately on his entrance to the oxygen chamber there was marked subjective improvement with disappearance of the cyanosis; within twelve hours the temperature dropped from 104 to 100 and the pulse rate from 125 to below 90.

CASE 4.—A woman, aged 43, very obese, was suffering from a large intrathoracic adenomatous goiter without hyperthyroidism, but which was causing dyspnea and chronic cyanosis from pressure, thus necessitating an immediate operation. On the evening following thyroidectomy her breathing was easier and her color better, but during the night the dyspnea and cyanosis returned, and by morning the cyanosis was marked and the patient very drowsy; there was much mucus in the trachea and many râles throughout the lungs, but no consolidation. She was removed to the oxygen chamber practically unconscious, as after recovery she did not remember being transferred, although at the time she apparently responded to questions; this is a well known characteristic of anoxemia. Immediately there was a startling improvement; her color became excellent and consciousness returned, followed by the rapid and characteristic drop in the temperature from 105 to about 99. On removal from the chamber thirty-six hours later there was a rise in temperature of 1 degree as the result of a slight cyanosis, which persisted for two days, but there were no other untoward symptoms and pneumonia did not develop.

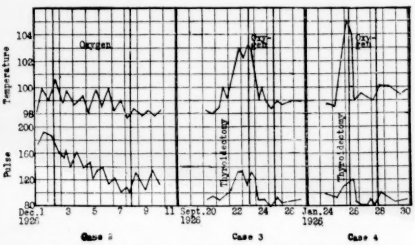

Chart 1.—Temperature and pulse in cases 2, 3 and 4.

The type of patient illustrated in case 4 frequently develops frank pneumonia with its added dangers if oxygen is not used early. There is no evidence, however, to justify the belief that oxygen increases the patient's resistance to infection. The simplest interpretation is that the avoidance of anoxemia prevents the lowering of the resistance both to the initial infection and to its later extension. The value of this prophylactic effect is seen in case 5, in which frank pneumonia would have been particularly dangerous on account of the patient's age and general debility.

CASE 5.—A woman, aged 52, entered the hospital with severe exophthalmic goiter, a basal metabolic rate of + 62, and marked cardiac injury as a result of the long duration of the disease aggravated by an old chronic mitral endocarditis with stenosis; there was marked generalized anasarca. On the third day the patient had a severe chill, a rise in temperature to 106 F., cyanosis, dyspnea and pulmonary edema, but no definite symptoms of consolidation. Immediately after she entered the oxygen chamber there was marked improvement and relief from the dyspnea with disappearance of the cyanosis. The patient was most emphatic about the subjective relief, and immediately dropped off into a quiet sleep. Within six hours the temperature fell from 105.4 to about 99, and the pulse rate from 138 to below 80. She was kept in the chamber five days, with rapid decrease in anasarca and general improvement (chart 2).

CASE 6.—A woman, aged 28, entered the hospital in the crisis stage of exophthalmic goiter with a basal metabolic rate of + 107, which decreased with the use of compound solution of iodine to + 70 in three weeks. Following thyroidectomy there

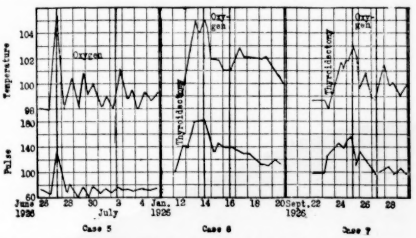

Chart 2.—Temperature and pulse in cases 5, 6 and 7.

was a marked exophthalmic goiter reaction characterized by a pulse rate of 180, an elevation of temperature to 105, and definite signs of bronchopneumonia; there was slight cyanosis on the second day, becoming more marked on the third day, when the patient's condition was very critical. After oxygen treatment was begun there was marked and rapid improvement and the cyanosis immediately disappeared, the temperature dropped from 105 to 102 and the pulse rate from 180 to 140 within a few hours. After forty-eight hours, the patient was removed from the oxygen chamber. There was a temporary rise in temperature followed by progressive improvement.

CASE 7.—A woman, aged 34, was suffering from severe exophthalmic goiter; she was markedly stimulated and her basal metabolic rate was + 108 and + 112, dropping to + 60 after treatment with compound solution of iodine for two weeks. Following thyroidectomy, the development of cyanosis from pulmonary edema caused considerable difficulty in breathing. There was marked subjective relief with the beginning of the oxygen treatment, followed by the characteristic drop in the temperature and pulse rate. Her general condition rapidly improved, and by the next morning she was out of danger. She was kept in the oxygen chamber forty-eight hours, and after removal there was a definite elevation in temperature which, however, rapidly subsided.

The early removal of the two preceding patients from the oxygen chamber resulted in only slightly unfavorable reactions of short duration. However, one must guard against removing patients too soon. Early in our experience one death occurred apparently as the result of a premature removal.

CASE 8.—A man, aged 40, was suffering from progressive thrombo-angiitis obliterans with gangrene of the toes. Lumbar sympathetic ganglionectomy was performed, and following the operation extensive pulmonary edema and bronchopneumonia rapidly developed and the patient became cyanotic. Attempts were made to give oxygen by the intranasal catheter method without success. On the third day, he was transferred to the oxygen chamber in a precarious condition. The chest and trachea were filled with mucus; the patient was markedly cyanotic, complained of extreme pain, and was very restless. After admission to the chamber the cyanosis disappeared, and at the same time there was marked improvement in his gen-

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eral condition and a decrease of the pain in his feet. During the following six days the improvement in his general condition continued, and there was a decrease in the mucus and evidence of increased consolidation. However, if the oxygen tension was allowed to fall there was a slight rise in temperature (this observation would now put us on our guard), but, in spite of this, on the seventh day his condition appeared so good that it seemed safe to remove him from the oxygen chamber. For the first hour or two his condition remained about the same, although breathing was more difficult; the mucus in the chest gradually increased and was accompanied by deepening cyanosis and elevation of the temperature to 102. After seven hours it was evident that the patient was again in a critical condition. He was readmitted to the oxygen chamber, and slight immediate improvement occurred but was not maintained. The fluid in the lungs increased in amount, and progressively higher concentrations of oxygen were required to prevent cyanosis; the pulmonic process rapidly progressed, and the patient died. We have since been very careful to avoid premature removal of patients from the oxygen chamber. This case suggests that the intermittent oxygen treatment, as occasionally used, may even be harmful as well as ineffectual.

The drop in temperature when the patient enters the oxygen chamber may be only temporary, thus apparently indicating that oxygen may produce only temporary benefit. Such a conclusion, however, is not justified because in the early stages of pneumonia only part of the increase in temperature may be directly due to the infection; the remainder may be due to the superimposition of anoxemia, which probably renders the temperature-regulating centers unusually sensitive to the toxin of the infection. This influence is apparently not unlike the increased sensitivity of the respiratory center to an increase in carbon dioxide tension if at the same time anoxemia is superimposed. In the following case there was a marked immediate drop in temperature as a result of the relief of oxygen-want, after which the temperature again gradually rose, this time, however, indicating the progress of the pneumonic process with its increased toxemia.

CASE 9.—A man, aged 21, had a moderately severe exophthalmic goiter with a basal metabolic rate of +77 which was reduced to +44 after administration of compound solution of iodine for three weeks. Following thyroidectomy there was an immediate rise in temperature with the development of a pneumonic process at the base of the left lung, dyspnea and cyanosis. Improvement was rapid after entrance to the chamber; the relief from the dyspnea and cyanosis was immediate, and was followed within twelve hours by the characteristic drop in temperature. It decreased from 105 to 101.5. The pneumonic process, however, continued, finally becoming very extensive with increasing temperature during the next three days to 105. This was followed by a gradual improvement with decreasing temperature, while the oxygen tension was between 45 and 55 per cent. When the oxygen concentration was lowered to between 30 and 40 per cent, the temperature remained constant for a few days and then again decreased to below 100. On removal of the patient from the chamber on the thirteenth day there was a rapid rise in temperature to 103.4, followed by a gradual decline during the next three days.

A primary rise in temperature after the patient's admission to the oxygen chamber may occur if he enters before or as soon as anoxemia develops and before the pneumonic infection has developed sufficiently to produce a reaction; such an instance is illustrated in case 10.

CASE 10.—A baby, aged 13 months, had inhaled a foreign body into the bronchus three days previously. The foreign body was readily removed by bronchoscopy. Following this, edema of the larynx developed; the patient became dyspneic and cyanotic, and consequently was placed directly in the oxygen chamber. There was immediate improvement. As there had been no delay there had been no elevation of the temperature from cyanosis and consequently there could not be any fall in temperature. The next day pneumonia developed. The baby was critically ill for several days and barely survived. Had the oxygen chamber not been available, tracheotomy would have been necessary which, with its added risk, would probably have been fatal.

The most spectacular recovery is noted in case 11. The medical consultant made the following note: "Patient moribund so did not do much in way of examination. Heart fibrillating and rate can hardly be counted. Pulseless at wrist." Almost immediately after the patient was placed in the oxygen chamber, he improved rapidly. There was a crisis-like drop in temperature and marked improvement in the pulse. The important details are as follows:

CASE 11.—A man, aged 61, was in fair condition during the first three days after suprapubic prostatectomy for benign hypertrophy of the prostate. On the fourth day, he had a chill at night, with a sudden rise in temperature to 108 and then a drop to 104. On the forenoon of the fifth day he was moribund and cyanotic with a marked gray pallor; there was nothing definitely abnormal in the lungs. Oxygen given by intranasal catheter before he was transferred to the chamber resulted in slight improvement. One-half hour after entrance to the chamber he was markedly better, and within twelve hours the temperature had fallen to normal. However, he was critically ill for several days with dimness of vision, paralysis of the superior rectus muscle and thickness of speech possibly resulting from the profound anoxemia; after this his condition slowly but gradually improved.

SUMMARY

During the last year and a half, seventy-one patients have been treated in the oxygen chambers at the Mayo Clinic; thirty-nine died and thirty-two survived. Necropsy revealed pathologic lesions in twenty that oxygen treatment could not influence. Three of the thirty-two that lived were placed in the oxygen chamber as a prophylactic measure to prevent an anticipated reaction, and it happened that a severe reaction did not develop. The other twenty-nine showed marked clinical improvement, and in twelve of these the condition and clinical course were so severe that one can conservatively ascribe their survival to the fact that they were placed in the oxygen chamber.

Oxygen treatment is of value only in relieving the patient of the added load and danger of anoxemia, and it must be continued until the cause of the anoxemia is relieved. There is no evidence that oxygen increases the patient's resistance to infection; but it does prevent the lowering of his resistance, which occurs when he becomes anoxemic, and therefore its administration should be initiated at the very first sign of cyanosis.

Our study shows that a vicious circle can be started by a mild pulmonary or bronchial infection. This leads to pulmonary congestion and edema, which, interfering with the aeration of the blood, cause anoxemia and cyanosis; the patient then becomes more susceptible to the spread of the infection, which results in the rapid development or extension of the pneumonic process, and this in turn completes the vicious circle by increasing the anoxemia. We have also noted that a mild bronchial or pulmonary infection, if accompanied by cyanosis, causes a greater elevation of the temperature than the same degree of infection if cyanosis is prevented by the administration of oxygen. Oxygen administration, therefore, frequently produces a crisis-like drop in temperature, decrease in the pulse rate and marked clinical improvement.

The greatest therapeutic value of oxygen is obtained in cases of acute anoxemia, as evidenced by cyanosis, such as occurs in pulmonary congestion and edema, frank pneumonia, or laryngeal or tracheal obstruction. In such conditions, oxygen treatment may be a life-saving procedure.

THE FEMALE SEX HORMONE

VIII. SIMPLIFICATION OF TECHNIC *

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NEW YORK

Since our demonstration [1] of the female sex hormone in the circulating blood in August, 1925, it has been our aim to simplify the technic to such an extent as to enable any well equipped laboratory to perform the test. It appears to us that we have now succeeded in so doing.

For details of methods previously described, the reader is referred to papers VI [2] and VII,[3] which appeared in THE JOURNAL in 1926 and 1927. Our present technic enables us to prepare the blood for injection in the course of two and one-half hours without the aid of any complicated apparatus or methods.

As numerous investigators, including ourselves, have found that individual mice show a greatly varying susceptibility to the reaction, we deem it safer to abstract 40 cc. of blood in order that a higher dose than a single mouse unit (M. U.) should be available for injection.

The technic now used by us is as follows:

1. Forty cubic centimeters of vein blood is taken, usually from an arm vein, by means of a 50 cc. syringe.

2. The blood is rapidly distributed in a large petri dish (6 inches in diameter), the bottom of which has been evenly covered with 30 Gm. of finely powdered anhydrous sodium sulphate (Na_2SO_4). The blood and powder are rapidly and intimately mixed so as to form a thick paste. During the first ten minutes of the drying process the mixture is continually stirred and mixed with a flexible metal spatula in order to avoid the formation of large, hard lumps. The petri dish is then set aside until complete drying has taken place, which requires at most a half hour.

3. The small, dry, hard lumps are finely triturated in a mortar.

4. The resulting fine, red-brown powder is poured into a separating funnel and shaken for ten minutes with 100 cc. of ether. After settling for ten minutes, the supernatant fluid is poured off and kept. To the residual sludge in the separating funnel, 75 cc. of additional ether is added and again shaken for ten minutes. After settling for ten minutes, the supernatant ether is combined with the previously obtained ethereal extract.

5. The combined ether extracts are placed in a bowl-shaped glass evaporating dish in front of an electric fan and the ether driven off completely, if time is not an important factor, or placed on a water bath under a hood, which requires only twenty minutes for drying.

6. The residual sediment is rubbed up (with sterile precautions) with 2 cc. of sterile water so as to form an emulsion.

7. The watery emulsion is injected in three equal portions at four hour intervals into a previously castrated adult white mouse (castration performed at least fourteen days previously). Long needles (1½ inches, gage 24) are employed, the needle being carried from near the tail end of the mouse, subcutaneously, to its shoulder region, in order that leakage from the tract may be reduced to a minimum.

8. Vaginal spreads are made twice a day for the next succeeding two days. For details of the readings of the vaginal spreads, as well as for the precautions to be taken for avoiding errors, the reader is referred to our last article.[3]

Summed up, the steps of the procedure now require abstraction of the blood; drying by means of sodium sulphate; extraction with ether; removal of the ether by evaporation; emulsification with water; and injection into the test mouse, followed in due course by readings of the vaginal spreads.

CLINICAL APPLICATION

Dosage.—Forty cubic centimeters of vein blood obtained five days before the expected menstrual period should regularly contain a mouse unit or more. Readings less than this, obtained at successive menstruations, signify subnormality of function.

The first 5 cc. of menstrual blood shed in normal patients regularly contain a mouse unit.[4] Continued presence of a mouse unit after the first 5 cc. has been shed signifies deviations from the normal (this applies especially to puberty and preclimacteric hemorrhage).

Time for Abstracting the Blood.—When menstruation appears at fixed intervals it is now our habit to confine our examination to from five to three days before the expected period, thus saving the patient from repeated venipunctures as well as reducing the number of bloods to be examined. When the menstrual dates are irregular or when amenorrhea or continued bleeding exists, weekly tests should be performed over periods varying from four to five weeks in order to demonstrate the nature and duration of the cycle.

Pregnancy.—In pregnancy the hormone level steadily increases from the first to the last months of gestation. We still find it advisable to obtain 40 cc. of blood, especially in the early months. A strong reaction is readily found after the eighth week of gestation. Between the sixth and the eighth week a positive reaction may or may not be obtained.

Amenorrhea, Sterility, Endocrine Conditions.—In all these conditions, regularly weekly abstraction of blood for the test must be practiced, as the exact nature of the cycle requires to be determined in each instance.

Reading of the Vaginal Spreads.—In the readings the following symbols are employed:

0 = negative; leukocytes and a few pale nucleated epithelial cells.

1 = negative; leukocytes predominant.

2 = negative, ±; moderate number of leukocytes, many nucleated epithelial cells.

3 = weak positive; no leukocytes, nucleated epithelial cells.

4 = strong positive; no leukocytes, mainly large, squamous, non-nucleated epithelial cells.

10 East Eighty-Fifth Street—145 West Eighty-Sixth Street.

* From the Laboratories and the gynecologic service of Mount Sinai Hospital.

1. Frank, R. T.; Frank, M. L.; Gustavson, R. G., and Weyerts, W. W.: Demonstration of the Female Sex Hormone in the Circulating Blood: I. Preliminary Report, J. A. M. A. **85**: 510 (Aug. 15) 1925.

2. Frank, R. T., and Goldberger, M. A.: The Female Sex Hormone: VI. Demonstration of the Female Sex Hormone in the Human Blood; Technic; Clinical Applicability, J. A. M. A. **87**: 1719 (Nov. 20) 1926.

3. Frank, R. T., and Goldberger, M. A.: Clinical Data Obtained with the Female Sex Hormone Blood Test, J. A. M. A. **90**: 106 (Jan. 14) 1928.

4. We have found it convenient to add 10 cc. of 95 per cent ethyl alcohol to menstrual bloods, then drying with 15 Gm. of anhydrous sodium sulphate and proceeding as above.

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THE EFFECT OF ANESTHETICS ON HEPATIC FUNCTION *

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AND
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Experimental studies on liver function are often carried out under anesthesia, although it is being increasingly recognized that anesthetics modify physiologic processes; the pharmacologist has also shown that they alter the response of the body to many drugs. Death at times occurs during operative procedures on patients with severe liver disease; the effect of anesthetics on a diseased liver may play an important rôle in such fatalities.

For these reasons we have undertaken to study the effect of various anesthetics on the liver, as indicated by bile pigment disturbances and by the bromsulphalein test for hepatic function. The changes which anesthetics produce on the liver, however, have a more general interest in that this impaired function is only a

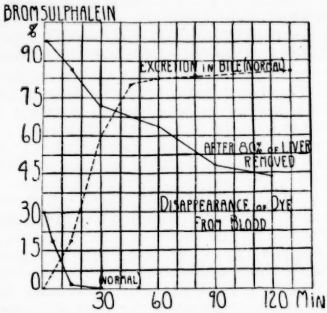

Chart 1.—Disappearance of bromsulphalein from the blood of a normal rabbit, and in a rabbit with 80 per cent of the liver removed; also the rate of excretion in the bile of a normal rabbit; 5 mg. per kilogram injected intravenously in each experiment.

reflection of the widespread depression of cell activity resulting from certain anesthetics; analogous changes are undoubtedly produced in most other organs.

The tests based on pigment metabolism which we have employed are the bilirubin concentration in the blood and the urobilinogen excretion in the urine. The bilirubin in the blood was estimated by comparing the diluted serum with a 1:10,000 solution of potassium bichromate, as originated by Meulengratsch. Normally by this method there is in the dog insufficient bilirubin in the serum for quantitative determination.

The urobilinogen in the urine was estimated on a freshly voided specimen, the technic of Wallace and Diamond [1] being employed. The highest dilution of urine which gives a reddish color with Ehrlich's diazobenzaldehyde reagent is taken as the end-point. Normally, in dogs on a mixed diet, the dilution index ranges from 5 to 10.

The dye test which we used was the method originated by one of us, which is based on the ability of the liver to remove those dyes from the blood stream that are excreted in the bile. Rosenthal and White [2] studied a large group of phthalein dyes and found that bromsulphalein, a new dye synthesized by White, was excreted in the bile very rapidly; 85 per cent could be recovered in the rabbit's bile within one hour after an intravenous injection. Normally the liver can remove it almost completely from the blood within fifteen minutes after injection, but if the liver is injured

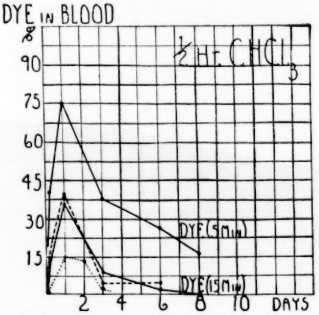

Chart 2.—Effect on hepatic function tests of half an hour of chloroform inhalation anesthesia. The upper continuous line represents concentration of bromsulphalein in the blood five minutes after its intravenous injection; lower continuous line, dye in blood fifteen minutes after injection; broken line, urobilinogen in urine; dotted line, bilirubinemia. Abscissas represent days following anesthesia.

it cannot normally take up the dye, which therefore remains in the blood for a very long time. If 80 per cent of the rabbit's liver is removed and the dye injected, more than 80 per cent of it will still be present in the blood fifteen minutes after injection, at which time it should normally all be removed (chart 1).

In the present series of tests, 5 mg. of bromsulphalein per kilogram of body weight was injected into a superficial leg vein of a dog and samples of blood

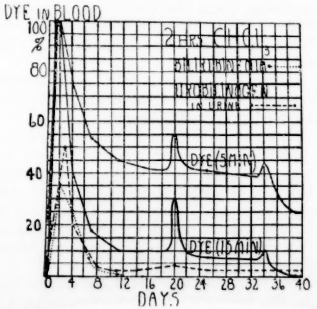

Chart 3.—Effect of two hours of chloroform. The increased bilirubin in the blood and urobilinogen in the urine returned to normal in eleven days. Dye retention persisted for forty days. The peaks in the curves of dye retention (twentieth and thirty-third days) were associated with lipemia.

were removed from another leg vein at five, ten and fifteen minutes after injection. The dye was estimated colorimetrically in the serum or plasma, as described elsewhere.[3] On the charts are recorded the amounts

* From the Department of Pharmacology, McGill University.
* Read before the Associated Anaesthetists of the United States and Canada, Washington, D. C., May 17, 1927.

1. Wallace, G. B., and Diamond, J. S.: Significance of Urobilinogen in Urine as Test for Liver Function, Arch. Int. Med. **35**: 698 (June) 1925.

2. Rosenthal, S. M., and White, E. C.: J. Pharmacol. & Exper. Therap. **24**: 265 (Nov.) 1924.

3. Rosenthal, S. M., and White, E. C.: Clinical Application of Bromsulphalein Test for Hepatic Function, J. A. M. A. **84**: 1112 (April 11) 1925.

of dye in the samples of blood taken at five and fifteen minute intervals after the injection. Normally in dogs, five minutes after the dye is injected, from 15 to 40 per cent remains in the blood, and fifteen minutes after injection it is practically all gone from the blood.

Twenty-five dogs were used in this series of experiments. Control tests were performed on each dog one

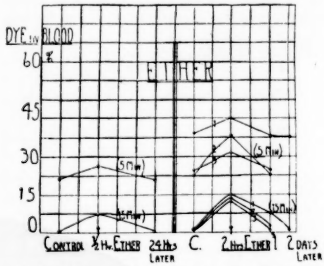

Chart 4.—The effect of ether on function tests. Temporary retention of dye in tests done at end of anesthetic period. Return to normal in twenty-four hours; no bilirubinemia. Upper curves, dye in blood five minutes after its injection. Lower curves, dye in blood fifteen minutes after injection.

or more days before the experiment. Tests were repeated at the end of an anesthetic period, while the anesthetic was still being administered. They were again performed the day after the anesthesia, and when necessary on successive days until the results returned to normal.

CHLOROFORM

During the last twenty-five years, laboratory workers have repeatedly shown that chloroform is a dangerous anesthetic and a toxic drug, but, in spite of their numerous warnings, it is still being used all too extensively in the clinic. This is largely due to the belief of those who use chloroform that the toxic after-effects, such as liver and kidney injury, are only occasional happenings, resulting from hypersusceptibility or overdosage. However, the evidence is now indisputable that chloroform poisoning is synonymous with chloroform anesthesia.

Our functional studies not only bear this out but also show that the after-effects are of much longer duration than had been previously thought.

Whipple and Sperry [4] found that two hours of anesthesia produced pathologic changes in the liver that required from two to three weeks for complete repair.

In chart 2 it is seen that half an hour of chloroform anesthesia produced a transient bilirubinemia and urobilinogenuria that returned to normal in three days. The bromsulphalein test, however, showed dye retention for eight days.

With two hours of chloroform, the icterus index rose to 11 on the following day and required ten days to return to normal (chart 3). The urobilinogen dilution index in the urine rose from the normal value of five to 100 on the following day, and also required ten days for a return to normal values. The bromsulphalein test showed 100 per cent retention of dye in the blood (fifteen minutes after its injection) for the first two days after chloroform and required six weeks for recovery. These observations demonstrate that the dye test affords a much more sensitive index of injury to the liver cells than do estimations of bile pigments in the blood and urine. This is borne out by the clinical notation that the dye test may often reveal impaired function in chronic liver disease while the pigment determinations show normal values.

Tests were also performed at the end of the anesthetic period while the animals were still under the influence of chloroform. There was always an immediate depression, more marked than with ether, but the injury with chloroform was always greatest twenty-four hours after anesthesia. Thus, after half an hour of chloroform, at the end of the period of anesthesia the bromsulphalein test showed 13 per cent retention of dye (fifteen minutes after injection, when it should have been all gone from the blood). The next day, however, there was 35 per cent retention of dye. These functional changes correspond to the pathologic changes, for Whipple has shown that the pathologic injury is greatest twenty-four hours after the anesthesia.

ETHER

No definite pathologic changes in the liver are produced by prolonged ether anesthesia.[5] Mann [6] has called attention to the diminution of bile flow and the rise in blood sugar during ether anesthesia, which may be interpreted as functional disturbances of the physiologic activity of the liver. We have found that during ether anesthesia there is always a slight impairment of function as shown by the bromsulphalein test, although no abnormalities in urobilinogen excretion and no increase in bilirubin in the blood occurred.

After half an hour of ether anesthesia, impaired function can be demonstrated with the bromsulphalein test, and longer periods of anesthesia produce proportionally increased degrees of injury (chart 4). This immediate depression of function was not so marked as with chloroform; two hours of ether caused an average dye retention of 14 per cent (fifteen minutes after injection), while with two hours of chloroform there was 20 per cent retention. But the striking difference between these anesthetics is that with ether the animal has returned to normal the next day, while with chloroform the harm continues to progress and does not reach a maximum until the day after the anesthesia.

NITROUS OXIDE AND ETHYLENE

Nitrous oxide and ethylene were administered to a series of dogs by means of a rubber mask which fits

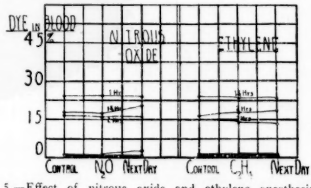

Chart 5.—Effect of nitrous oxide and ethylene anesthesia on liver function tests. No disturbances were produced in the dye test or in pigment metabolism.

tightly over the muzzle of the animal. They were given from 17 to 25 per cent of oxygen, and care was taken to avoid cyanosis throughout the experiment. An expiratory valve was used as in human beings, so that no increased pressure was employed. In striking con-

4. Whipple, J. H., and Sperry, F. A.: Bull. Johns Hopkins Hosp. **20**: 278, 1909.

5. Leppman, F.: Mitt. a. d. Grenzgeb. d. Med. u. Chir. **4**: 21, 1898. Selbach, W.: Arch. f. exper. Path. u. Pharmakol. **35**: 1, 1894.

6. Mann, F. C.: Anesthesia and Analgesia **4**: 107, 1925.

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trast to ether and chloroform, gas anesthesia from one to two hours produced neither immediate nor delayed impairment of hepatic function, as determined by the dye test and the blood bilirubin (chart 5).

GAS PLUS ASPHYXIA

In an effort to conserve the amount of gas used, anesthesia was then attempted by placing the animals in a closed glass chamber and administering the gas mixed with oxygen under a pressure of from 40 to 60 mm. of mercury. Despite the fact that an intermittent flow of gas and oxygen was admitted to the chamber, considerable cyanosis was present. Pure oxygen was often admitted to combat this, so that in general the anesthesia was quite irregular. At the end of the period, the animals were removed from the chamber; the anesthesia was maintained with the rubber mask while the tests were being performed. We were surprised to find that all the animals sustained an immediate impairment of function, which did not return to normal the next day, as with ether, but required several days for recovery (chart 6). There was also an increase in blood bilirubin for two or three days following the experiment.

In an attempt to explain these results on a basis of cyanosis, an animal under ether anesthesia for one and one-half hours was kept cyanotic by the continuous

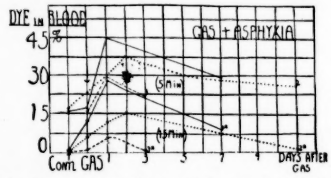

Chart 6.—Gas and oxygen administered in a closed chamber and associated with asphyxia. Considerable impairment of function with slow recovery. Upper curves show percentage of dye in blood five minutes after injection; lower curves (1 *A*, 2 *A*, 3 *A*) indicate the quantity of dye in the blood fifteen minutes after injection. Slight bilirubinemia and urobilinogenuria occurred in experiments 1 and 2. Curve 1, nitrous oxide for two hours; curve 2, ethylene for two hours; curve 3, ethylene for one and one-half hours.

administration of carbon dioxide. A dye test performed at the end of the experiment showed quite marked retention of dye, but the next day there was no dye retention and no increase in bilirubin in the blood (chart 7). Control experiments on the same dog with ether, and with ether and oxygen given for similar periods of time, showed much less impairment of function than when carbon dioxide was administered. It is thus shown that cyanosis can cause considerable temporary injury, but the delayed return to normal which occurred when the animals were anesthetized in the glass cage has not yet been explained.

MORPHINE

Tests were performed on three dogs one and one-half hours following the administration of 10 mg. of morphine per kilogram of body weight. Quite severe impairment of function was found with the bromsulphalein test, just as marked as after a similar period of chloroform anesthesia (chart 8). On the following day, however, recovery was complete, and no disturbance of bile pigment metabolism could be demonstrated.

Cyanosis is intimately associated with the other effects of morphine, and it was thought that the depression of hepatic function might be explained in this way. However, in one dog an attempt was made to prevent cyanosis by the continuous administration of oxygen through a tube in the pharynx, without appreciably offsetting the changes that occurred in the bromsulphalein test. One dog, to which both ether and morphine had been given, showed an impairment of function that required six days to return to normal (chart 8).

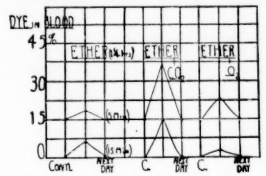

Chart 7.—Effect of carbon dioxide and ether inhalation on liver function. Ether alone, ether with carbon dioxide, and ether with oxygen were administered to the same dog at weekly intervals. The carbon dioxide considerably increased the impaired function.

Dogs are much more resistant to the narcotic effects of morphine than human beings, probably because of the less highly organized nervous system. The dose necessary to produce drowsiness in dogs is from thirty to fifty times as great as the therapeutic dose in man. It is therefore unlikely that in man this severe degree of depression of function of organs other than those of the nervous system would occur as a result of a therapeutic dose of morphine.

SUMMARY

Brief periods of chloroform anesthesia are sufficient to produce immediate and delayed toxic effects on the liver; half an hour of chloroform causes injury that requires eight days for functional recovery, while two hours of anesthesia requires six weeks to return to normal.

Disturbance of function could be demonstrated with the bromsulphalein test long after pigment metabolism had returned to normal.

Ether produces a definite but transitory impairment of function. Recovery is usually complete in twenty-four hours.

Nitrous oxide and ethylene administered through a mask did not produce any change in the bromsulphalein test for hepatic function or any disturbance of pigment metabolism.

Nitrous oxide and ethylene given in a closed chamber with poor oxygenation caused both immediate and delayed toxic effects on the liver.

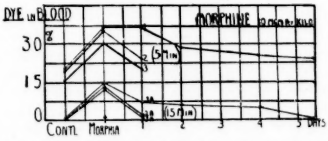

Chart 8.—Effect of morphine on liver function tests: moderate impairment, which returned to normal in twenty-four hours. In experiment 1, ether also was given for one and one-half hours, with delayed recovery requiring one week (dye test), and bilirubinemia for three days. Curves 1 and 1 *A*, morphine and ether for one and one-half hours.

Cyanosis in itself increases the toxicity of anesthetics on the liver.

Large doses of morphine in dogs cause considerable depression of function, with complete recovery in twenty-four hours.

Ethylene would seem to be the anesthetic of choice for operation in severe liver disease.

A SUGGESTED TEST FOR PREGNANCY

BASED ON THE ACTION OF GRAVID FEMALE BLOOD SERUM ON MOUSE UTERUS: PRELIMINARY REPORT *

A. C. SIDDALL, M.D.
CLEVELAND

A simple reliable test for the presence or absence of pregnancy would be most valuable not only to the obstetrician but also to every general practitioner. In the tuberculous or the cancerous patient a correct answer is often of vital importance. When ectopic pregnancy is a possibility or when the patient is approaching the menopause, an accurate test would prevent mistakes in delay or in intervention.

Perhaps the best known test for pregnancy is the Abderhalden reaction.[1] In 1924, Smith and Shipley [2] made an attempt to bring this test within the realm of practicability. They concluded, however, that "the test [is] of no value for the diagnosis of pregnancy." De Lee [3] states that the epinephrine-glycosuria test,[4] Kammitzer's phlorhizin test,[5] the dextrose test and Fahraeus' [6] red blood cell precipitation test possess only academic interest.

In a recent summary of methods of diagnosing pregnancy, Hirst and Long [7] state that "no laboratory method has yet been devised which is absolutely and infallibly diagnostic of the presence or absence of pregnancy (except roentgen ray in the late months)." These workers state further that "the experimental work in this field has been dominated by two ideas," first, that pregnancy causes a specific protein (ferment) to appear in the maternal blood, and second, that pregnancy during the early months is prone to cause glycosuria. They continue with the statement that the most reliable test to date is the alimentary glycosuria test, and they present a new series of 150 cases with 6 per cent error in the early diagnosis of pregnancy and

TABLE 1.—*Summary of Cases*

Patient				Clinically Pregnant			Mouse				
Name	Sex†	Age	Race	Para	Duration, Months	Check Examination‡	Number	Serum, Cc.	Weight, Mg.	Uterus Weight, Mg.	Ratio
F. D.	♀	23	Col	1	3½	C	20	8	18,750	105	178
A. H.	♀	33	W	3	4	C	71	5	17,715	85	208
B. L.	♀	17	Col	0	6	C	11	4	17,395	65	266
A. B.	♀	31	W	1	4	C	3	4	17,290	85	202
M. S.	♀	29	W	1	Postpartum	C	10	4	16,705	90	185
M. M.	♀	30	Col	6	6	C	29	6	16,015	82	195
R. H.	♀	22	Col	0	4	C	30	6	16,000	65	246
R. M.	♀	32	W	0	In labor	C	65	4	15,980	59	318
F. M.	♀	39	W	8	9	C	38	4	15,850	57	278
A. B.	♀	19	Col	1	4	C	21	6	15,760	85	185
M. M.	♀	22	W	5	4	C	72	4	15,750	60	262
L. M.	♀	17	Col	2	6	C	62	5	14,550	65	223
J. P.	♀	18	W	0	8½	C	35	4	14,580	60	239
F. R.	♀	23	Col	1	6½	C	22	6	14,050	100	140
R. L.	♀	29	Col	5	6	C	61	5	13,920	40	348
R. M.	♀	..	Col	..	6½	C	45	5	13,540	40	338
A. A.	♀	26	Col	2	6½	C	55	5	13,130	35	375
A. C.	♀	23	Col	2	8	C	54	5	12,510	40	312
M. C.	♀	44	W	10	8½	C	36	4	12,210	50	244
D. B.	♀	17	Col	1	7	C	57	5	11,860	35	338
S. F.	♀	28	Col	6	6	C	63	4	11,770	30	392
R. R.	♀	38	W	3	3	C	67	5	11,470	30	382
A. G.	♀	19	Col	1	5	C	64	5	11,080	37	299
K.	♀	25	W	5	7		37	4	11,010	45	244
I. B.	♀	23	Col	7	5	C	56	5	9,850	35	281
A. S.	♀	19	Col	0	6½	C	52	4	9,790	27	362
L. M.	♀	24	Col	2	Postpartum		16	4	20,770	30	692
S. R.	♀	29	Col	3	4 ?	I	31	5	18,070	22	848
I. W.	♀	30	W	..	Menstruation, 4 days	C	6	4	18,100	45	402
A. S.	♀	33	W	0	Intermenstrual	C	17	4	17,150	22	779
A. K.	♂	50	W	..	.....	C	49	5	17,030	22	774
P. D.	♂	27	W	..	.....	C	50	5	16,740	15	1,116
I. M.	♀	31	W	0	4 months	I	69	5	16,550	15	1,103
E. T.	♀	30	W	2	1, ectopic	I	70	4	16,265	15	1,084
E. J.	♀	32	W	0	Postmenstrual	C	48	5	16,080	15	1,072
E. J.	♀	35	Col	4	Ectopic ?	I	68	4	15,220	15	1,014
J. G.	♀	29	Col	0	Menstruation, 7 days	C	18	4	14,750	18	819
V. N.	♀	20	W	0	Intermenstrual period	C	60	5	14,060	15	937
C. G.	♂	30	W	..	.....	C	59	5	13,400	15	894
L. G.	♀	47	Col	14	Postmenstrual	C	46	5	13,385	25	535
A. C.	♂	29	W	..	.....	C	2	4	13,100	25	524
J. T.	♂	28	W	..	.....	C	47	5	13,000	12	1,083
S. P.	♀	22	Col	6	2½	C	53	4	12,370	25	494
A. D.	♀	30	Col	0	Postmenstrual	C	58	5	11,860	8	1,482
E. W.	♀	25	Col	0	1 ectopic	I	72	5	16,550	20	827

Incompleted cases, 12.

† In this column, ♂ indicates male; ♀, female.

‡ In this column, C denotes that the clinical diagnosis made at the first examination and listed under "Duration" was correct, while I denotes that it was incorrect. Most check examinations were made two months after the first.

* From the Pathological Laboratories, Lakeside Hospital.

* These investigations were made possible through the courtesy of Prof. H. T. Karsner. Many of the patients tested were obtained from the Maternity Dispensary through the kind cooperation of Dr. F. S. Mowry and others.

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8 per cent error in the nonpregnant. Bronnicoff,[8] in 1924, showed the limitations of the phlorhizin test when he reported his results with 1,000 phlorhizin tests in 300 women and fifty men. He proved that the reaction is not specific for pregnancy, for he obtained a positive reaction in 72 per cent of men and in many nonpregnant women. Also, the reaction veered from positive to negative or vice versa with the menses.

In this preliminary report, the suggested test for pregnancy is based on a different idea from those mentioned by Hirst and Long. Early in 1926, the following hypothesis was set up as a result of experience with pregnant women: If the enlargement of the uterus and of the breasts of a pregnant woman is due to the presence of a hormone in the circulation, then similar changes should occur in the uterus and breasts of a test animal that receives injections of blood from the pregnant female. Obviously, the blood from nonpregnant women should theoretically give a negative result.

The results reported in this paper support this contention with striking accuracy, but final conclusions cannot be drawn from such a small series of cases. A review of the literature reveals only one report that deals with this idea prior to 1926. In 1924, Binz [9] observed that, after injecting female mice with the blood of pregnant women, a transverse enlargement of the mouse's uterus resulted. Toward the end of 1926, Trivino [10] and Fels [11] observed the same result, but as yet no definite test for pregnancy has been elaborated. Frank and his co-workers [12] have studied the presence of the "female sex hormone" in the circulation, and have shown that it not only is present during pregnancy but fluctuates during the normal menstrual cycle. Therefore, the blood of nonpregnant females should have some effect on the uterus of the test animal, but the observations here reported indicate that this effect is so small that the method outlined farther on as a test for pregnancy is not vitiated. In the investigations here presented, immature virgin white mice were used as test animals. They were not castrated, so the hormone in the blood tested not only acted on the uterus of the mouse but through stimulation of the mouse's ovaries caused a greater enlargement of the uterus than would be expected in castrated animals.

TECHNIC OF TEST

The technic of the test is as follows: Twenty-five cubic centimeters of patient's blood is collected in a sterile tube and permitted to clot. The serum is withdrawn into another sterile tube and kept in the refrigerator. One cubic centimeter of the blood serum is injected subcutaneously into an immature virgin white mouse once daily for four or five days. On the sixth day, a vaginal smear is made according to the method elaborated by Allen and Doisy in order to determine the phase of the estrual cycle of the mouse. The animal is then killed, and the weight in milligrams is immediately determined on a chemical balance. The bicornate uterus together with the ovaries is dissected out in one piece free from the vagina and other attachments and the weight in milligrams determined on a chemical balance. The weight of the mouse is divided by the weight of the uterus plus the ovaries, and the resulting ratio is the criterion for a positive or negative conclusion. The results to date indicate that a ratio below 400 is positive for pregnancy while a ratio above 400 is negative for pregnancy.

A survey of table 1 shows that:

(*a*) There were twenty-six patients with a positive mouse test; nineteen patients with a negative mouse test, and twelve incomplete cases, making a total of fifty-seven. Fifty-seven mice were used for the tests and sixteen were used as controls (not injected), making a total of seventy-three mice used.

(*b*) Of the twenty-six patients who gave a positive mouse test, twenty-five were positively pregnant clinically, while one patient had been delivered the day before. For practical purposes the data in this case can be ruled out.

(*c*) Thirteen nonpregnant women gave a negative mouse test, and in five men who were also tested, the reaction was negative. Five of this group of nonpregnant women were doubtfully pregnant clinically at the time of the first examination but a later follow-up examination ruled out pregnancy. One patient gave a negative test but was clinically pregnant.

TABLE 2.—*Control Mice, Not Injected with Serum*

Number	Mouse Weight, Mg.	Uterus Weight, Mg.	Ratio
24	25,900	100	259
9	25,500	120	212
8	22,230	100	223
25	20,750	85	244
40	20,060	35	573
12	18,520	25	740
29	16,460	15	1,097
42	16,072	35	459
41	15,900	35	454
23	15,470	20	773
43	14 820	37	400
26	14,205	20	710
1	12,550	25	502
28	12,450	15	830
51	12,785	12	1,065
28	12,270	22	557

(*d*) Blood tested one day post partum causes a positive reaction in the mouse; seven and one-half weeks post partum, the blood gives a negative test.

(*e*) Every control mouse (not injected) weighing less than 20,000 mg. shows a ratio between 400 and 1,096, while injected animals giving a negative reaction show a similar variation of the ratio between 402 and 1,116.

(*f*) Mice weighing more than 20,000 mg. cannot be used for this test because the ratio lies between 212 and 259, which corresponds to the range of a true positive, from 140 to 375.

(*g*) The test is reliable early and late in pregnancy.

SUMMARY

1. I suggest in this preliminary report a test for pregnancy based on the action of the gravid female blood serum on the uterus of the immature virgin white mouse.

2. Forty-five patients in all were tested. Of nineteen nonpregnant patients, eighteen gave a negative mouse test. Of twenty-six pregnant patients, twenty-five gave a positive mouse test.

3. A large series of patients will be tested to establish definitely the accuracy of this procedure as a test for pregnancy.

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10. Trivino, F. G.: Sex Hormones: Action of Pregnant Women's Serum on Uterus of Mice, Klin. Wchnschr. **5:** 2022-2024 (Oct. 22) 1926.

11. Fels, E.: Ovarian Hormone in Blood of Pregnant Women, Klin. Wchnschr. **5:** 2349-2352 (Dec. 10) 1926.

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THE DISTRIBUTION OF BORIC ACID IN HUMAN ORGANS IN SIX DEATHS DUE TO BORIC ACID POISONING *

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The use of boric acid and its salts in the medical profession and in some of the economic lay industries has made them commonplace—so much so, in fact, that their power for harm through overdosage or accidental consumption has receded to the background until ordinary precaution, at times, is not used in administering these substances.

The potential danger of boric acid as a food preservative is such that its use has long been forbidden in the United States, France, Germany, Holland, Italy and Spain. Great Britain has only recently prohibited its use, acting on the basis of a prolonged investigation of the various methods of preserving foods. Boricized milk has caused serious bowel disorders in infants. A mixture of three parts of boric acid and one part of borax has been found a very effective preservative for milk, butter or meat products. Its common use in medicine as a mild disinfectant in washing the nose, throat, eyes and cavities, coupled with its use in compresses, has helped very materially to create an impression of harmlessness.

This laboratory has record of seven lethal cases of boric acid or borax poisoning. Six of these were in infants weighing about 7 pounds (3.2 Kg.) who received (according to the poorly kept records), from 60 to 150 cc. of a saturated solution of boric acid, mistaken for distilled water, or approximately 3 to 6 Gm. of boric acid per infant. A woman, aged 53, became sick and died after eating four pancakes made from a flour containing 51.12 per cent of sodium borate. A quantitative determination of the organs was not made, although the qualitative tests were positive for borates. In other reported cases from 1 to 3 Gm. has produced serious symptoms in infants, and from 15 to 30 Gm. has been fatal to adults.

The distribution of boric acid in the human tissues after a fatal poisoning has not been previously reported in the literature. The reported cases with lethal results from boric acid poisoning may be divided into three classes: (1) those in which there was a chemical examination, with pathologic and autopsy data; (2) those in which a chemical examination was not made but in which there were histologic observations, and (3) those in which death was due to a known source of boric acid.

Bazin [1] reported the case of a boy, aged 15 years, who died seven days after the first injection into the rectum of 48 teaspoonfuls of boric acid powder during a period of six days. A chemical analysis of the blood and intestinal tube was negative for borates. The general clinical symptoms were those noted by other authors reporting boric acid or borate poisoning. This is the only case in which the chemical, pathologic and autopsy observations were reported. Several cases have been reported which may be grouped in class 2, in which no chemical analyses were made on the cadaveric material. Among these is the report by Best [2] of a fatal result from the packing of 6 ounces (186 Gm.) of boric acid powder into a wound after an operation. A lengthy description of the histologic observations is given. The boric acid powder used was found to be chemically pure. Maguire,[3] Brose,[4] Williams,[5] Molodenow,[6] Schurzer [7] and Dopfer [8] report somewhat similar cases in which postmortem examinations were made. A case in which a solution of pure boric acid, mistaken for a saline laxative, proved fatal to an adult was reported by Potter.[9] A total of nine fatalities without any definite chemical observations have been reported.

Amount of Boric Acid in Organs in Lethal Cases of Boric Acid Poisoning

Case		Brain, Gm.	Heart, Gm.	Liver, Gm.	Lungs, Gm.	Right Lung, Gm.	Left Lung, Gm.	Stomach, Gm.	Bowel, Gm.	Kidneys, Gm.	Diaphragm, Gm.
1	Gm. per 100 Gm.	.....	0.1000	0.3064	0.0287	.....	.....	.....	0.01041	0.0348	.....
	Total in tissue	.....	0.0120	0.3064	0.02250	.....	.....	.....	0.0075	0.0122	.....
2	Gm. per 100 Gm.	0.2062	.....	0.00740	0.0093	.....	.....	0.01710	0.3150	0.00950	.....
	Total in tissue	0.6659	.....	0.00722	0.0075	.....	.....	0.00248	0.1575	0.00248	.....
3	Gm. per 100 Gm.	0.1440	0.0610	0.1087	0.07250	0.1162	0.0218	Combined	0.0211	0.0400	0.0229
	Total in tissue	0.5769	0.0112	0.1147	0.05334	0.0459	0.00744	Combined	0.0211	0.0112	0.0124
4	Gm. per 100 Gm.	0.2328	0.0903	0.0238	0.1718	0.2578	0.0998	0.0688	0.0693	0.03083	.....
	Total in tissue	0.9757	0.4208	0.3082	0.1203	0.0989	0.02230	0.0062	0.0430	0.00742	.....
5	Gm. per 100 Gm.	0.2555	.....	0.3145	0.01996	0.0205	0.01271	0.0348	0.00701	0.03773	.....
	Total in tissue	0.8811	.....	0.3774	0.01616	0.0112	0.00496	0.0087	0.04190	0.00870	.....
6	Gm. per 100 Gm.	0.2182	.....	0.09422	0.0263	.....	.....	.....	0.1092	0.00877	.....
	Total in tissue	0.9634	.....	0.11590	0.0211	.....	.....	.....	0.0808	0.00250	.....

A chemical examination of the various organs of the infants was made in order to ascertain the presence and distribution of the boric acid therein. The average percentages found in the tissues assayed (presented in the accompanying table) indicate that the brain and liver accumulate about the same and the higher percentages of boric acid; namely, 0.210 and 0.182 per cent, respectively. The bowel contained an intermediate amount of 0.102 per cent, while the heart, lungs, stomach, kidneys and diaphragm contained the lower percentages, 0.085, 0.0516, 0.0271 and 0.0124 per cent, respectively. The lower amount of boric acid in the stomach tissue (0.0358 per cent) may indicate that the acid was entering the systemic circulation through this channel by a process of osmosis [10] rather than by means of the bowel (0.1023 per cent) tissue. These amounts of boric acid are considerably more than the traces

* From the Coroner's Laboratory, Cook County, Illinois.

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4. Brose, L. D.: M. News **43**: 199-200, 1883.
5. Williams: Personal communication to the authors.
6. Molodenow, in Tillman's Text Book of Surgery, seventh German edition **1**: 162, 1901.
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9. Potter, Caryl: A Case of Borax Poisoning, J. A. M. A. **76**: 378 (Feb. 5) 1921.
10. Kahlenberg, L.: J. Biol. Chem. **62**: 149-156 (Nov.) 1924.

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reported by Moscati [11] in the tissue of a normal adult and fetus. The presence of the boric acid in the brain, lungs, heart and diaphragm may be explained by the phenomenon of osmosis. Kahlenberg [12] has been able to detect the presence of boric acid (turmeric paper test) in the urine fifty-one seconds after immersing his feet in a warm saturated solution. The boric acid passed through the unbroken skin as a living membrane into and through an eliminatory organ in a remarkably short time.

The chemical method used for assaying the boric acid was that of ashing in the presence of an excess of sodium hydroxide solution in a Hoskins electric furnace at a low red heat in the usual manner. A second ashing yielded as high as one third of the amounts of boric acid obtained from the first extraction of the material ashed at the low red heat. The extracts may be combined, but they were assayed separately in this case in order to determine the efficiency of the ashing and extraction. A third and fourth ashing and extraction did not yield any boric acid (turmeric paper test). The boric acid was assayed by titrating the free boric acid with sodium hydroxide in the presence of neutral glycerin according to the method described in the Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists.[13] Blank determinations were made and the results of the analysis were corrected accordingly.

HEALTH EXAMINATIONS AND THE PHYSICIAN

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Three years ago it was decided to require of all applicants for admission to Antioch College a thorough medical examination. Since applications are received from practically every state in the Union, it was manifestly impossible for members of the college health department to undertake this work. An examination form was therefore drawn up to the end that reports should be comparable and should provide all the information necessary in selecting a student for a college in which half the time is spent in industrial employment.

About 2,500 examinations have now been made, and it is possible to draw from the results certain conclusions as to the attitude of physicians in general toward the health examination. Since the report is not only a basis for selection but also a guide in assigning each freshman student to a particular industry, the examination must be made in some detail. The information required is somewhat different from that called for on the A. M. A. form, though not much more exacting to the physician. Occasionally, one reads ireful comments, such as, "This is the silliest examination I have ever seen," which, I assume, refers to the form rather than to the examination itself. On the other hand, expressions of appreciation of its thoroughness are quite as common, and not a few physicians add that their own children are growing to college age and that they would like to see a catalogue.

When the first freshman group under the preentrance examination plan reached college, we reexamined a random sample of fifty students. The results were somewhat disappointing, showing a number whose examinations had been perfunctory and had failed to warn us of well marked defects. In one case, a boy who had been certified to be in perfect health by his family physician was assigned to a construction job; he became faint while at work, was examined by the company's physician, and was found to have a very obvious mitral lesion which the heart was barely able to compensate. These experiences almost decided the college administration to discontinue a plan that is not without cost both to the college and to the applicants. However, we felt sure that the idea of periodic medical examinations was rapidly gaining ground among the profession, and that the quality of work was bound to improve. The form was revised; a covering letter was composed in which the incident of the boy with the mitral lesion was mentioned, and the experiment continued. Our faith has been justified by the increasing value of the returns received. For while it remains true that the family physician is tempted to believe that he knows all about the health of the youngster at whose birth he presided, without having recourse to a stethoscope, it is also true that the family physician has an unequaled knowledge of the family background and idiosyncrasies of the applicant. Provided the examination is thoroughly made, no other physician can give the college such valuable information.

When the forms are returned to us by the physician they are carefully read and a report is made both to the admissions committee and to the personnel department which assigns industrial work. The form is then filed in our department, and nobody, not even the president of the college, is given access to these files. We consider it essential always to deserve the confidence of our student patients. Each year they receive an examination from the college physician, and the data are accumulated on a special form which shows at a glance the changes from year to year. These data are valuable in case of sickness, in meeting problems of mental hygiene, and in making various adjustments in college life. They provide a rare opportunity for statistical research.

Soon after he or she reaches college, the freshman comes to my office for an interview. The purposes of this interview are to follow up the observations of the physician, reinforce his recommendations, insure that the student is well adjusted to his new environment, and engage his cooperation in the care of his health. At this time I discover by some simple subterfuge how thoroughly he has been examined. I may ask him innocently whether his physician has the same kind of blood pressure instrument as I have, or how high the chair was on to which he jumped ten times for exercise, or whether he was stripped absolutely when he was weighed. Such subtlety is not always necessary. When the percentage of hemoglobin or the blood pressure has been recorded as "normal" it is safe to assume that no measurements have been made, and indeed we have got into the way of returning such forms for amplification.

It is noteworthy that some parts of the examination are much more thoroughly made than others. Urine analysis is nearly always completed competently, and many cases of orthostatic albuminurias are discovered. There are still a few physicians who have no apparatus

11. Moscati G.: Arch. d. sc. biol. **3**: 279-288, 1922.
12. Kahlenberg, L.: Personal communication to the authors.
13. Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, Washington, D. C., 1925.

for measuring visual acuity and blood pressure, and some are apparently unfamiliar with exercise tests for cardiac efficiency. It is not uncommon to learn that after the applicant jumped ten times on or off a chair his pulse rate had increased only five or ten beats per minute and returned to normal in two or three seconds. Physicians are not very critical of undernourished applicants. Recently the nutrition of a girl who was more than 20 per cent underweight was characterized as excellent, and the mental and physical stamina as good. Any boy who is more than 5 feet 10 inches in height and who is below weight will find a ready excuse in that he has "grown rapidly." Color vision is a subject which evidently has not interested the profession at large. Examination of 346 consecutive forms showed that in only one case was defective color vision detected. In thirty-two cases, the color of the iris was given. Only 176 of these applicants became students and were subsequently examined in our department by two methods. The Holmgren wool test revealed only two cases of color blindness. Ishihara's test, a most valuable method not used as extensively as it might be, showed one red blind, four green blind, and eleven red green blind. The number of applicants who have received prophylactic treatment for typhoid or diphtheria is a very small minority but a minority which at present shows evident signs of growth.

The most astonishing deficiency in the returns is the failure of the physician to make any positive health recommendations. He is prominently invited to do so on the first page of the form as follows:

> This report is the basis on which the applicant's future is determined in three respects. He is advised:
>
> 1. Whether he should come to college.
> 2. What form of industrial occupation he may undertake.
> 3. How he may improve his physical condition so as to make the most of his opportunities both in industry and at college.
>
> Your examination of the applicant will enable you to give advice (if necessary) that should result in improvement of health and nutrition during the interval that must elapse before admission to the college.
>
> Please indicate on the last page what positive health measures you have recommended so that we may continue to pay attention to your suggestions.

The space provided on the back of the form is rarely used except for the remark, "No recommendations necessary."

It has been forcefully, and we believe rightly, argued that the physician who makes the health examination is best fitted to offer advice. In the last 100 reports received, however, there were seventy-two in which no positive advice had been given by the physician. These seventy-two students included some who had never been vaccinated, and others who were evidently undernourished or suffered from hay-fever, headaches, constipation and other remediable defects. Even when advice has been given, it frequently has failed to cover all the complaints registered in the form. Fortunately, at our freshman interview we can supply the missing advice, but for many applicants who are not accepted no remedy is provided.

CONCLUSION

I should say that the main defect in periodic health examinations, as they are conducted today, lies in the fact that the examining physician is still more interested in advanced symptoms of manifest disease than in those lesser disorders of function which call not for curative treatment but for prophylaxis.

Clinical Notes, Suggestions and New Instruments

ACUTE INTESTINAL OBSTRUCTION COMPLICATING PREGNANCY: INTESTINAL RESECTION AND RECOVERY *

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A multipara, aged 38 at term, complaining of severe abdominal pains, was admitted to the obstetric department of Dr. Joseph Baer, June 8, 1927. The pains, which had started four hours before admission, were located in the upper part of the abdomen and radiated to the right shoulder. She had vomited once. On examination it was evident that these were not labor pains but appeared to be due to a gallbladder colic, and so we were called in consultation. When we first saw the patient she did not appear very sick. Her temperature was 99.6 F., with a leukocytosis of 18,000. The pains were still present in the right hypochondrium, radiating to the back. In the four hours of her stay in the hospital she had not vomited. There was exquisite tenderness over the gallbladder area, and a vague mass could be palpated through the muscle resistance. It appeared that we were dealing with an acute cholecystitis and cholelithiasis, complicating pregnancy. We ordered a sedative and advised watchful waiting in hopes that the condition would subside spontaneously. The next morning, twenty-four hours after the onset of the attack, the patient's condition was unchanged. She had vomited once in the interim, the patient's temperature was 99.6, the leukocytosis was 19,000, and she had passed a few fecal particles and some gas following an enema. By afternoon, however, her condition had definitely changed for the worse, pain was more severe, the leukocyte count was 23,000, and she looked wan and worried. She had vomited twice since morning. As an empyema of the gallbladder was suspected, we decided to operate immediately with the intention of draining the gallbladder.

Under local anesthesia the abdominal cavity was opened in the gallbladder region. This was done through a small muscle splitting incision in order to injure as little as possible the abdominal muscles, which were soon to play an active part in parturition.

Much to our surprise, after a fairly large amount of seropurulent intraperitoneal fluid had been drained off, a small, normal gallbladder presented. A large, soft boggy mass could be palpated between the full-term, gravid uterus and the lateral abdominal wall. The wound was rapidly enlarged; the mass was delivered and was found to consist of a coil of about 3 feet of black, gangrenous intestine, probably jejunum, which had been caught over a band of adhesions extending from the uterus to the abdominal wall. The line of demarcation between the healthy afferent and efferent intestine was sharp. The operation was quickly completed after the manner of a Mikulicz operation, the wound margin being carefully sutured about the eviscerated loop. Large rubber drainage tubes were then placed in the intestine, reaching up in the afferent and down into the efferent bowel. A large amount of foul smelling, blood tinged fluid immediately flowed out of the afferent jejunum; later the patient was given fluids through the tube into the efferent loop. The patient withstood the operation well and, judging from the fetal heart tones, so did her child.

The following day the eviscerated intestine was resected with a cautery. It is of interest to note that the reaction following this procedure was much more severe than following the first operation. Later a U tube was placed with the limbs extending into both loops of intestine, and from then on the patient was able to take a good deal of her nourishment by mouth.

We requested the obstetric department to terminate pregnancy by a vaginal cesarean section, feeling that the patient would have a better chance to recover if the uterus was

* From the Surgical Service of the Michael Reese Hospital.

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emptied and fearful of the effect of active labor on the recent abdominal wound. The obstetricians, however, demurred on the plea of great danger from infection.

The convalescence was prompt and uneventful. On the eighth day active labor set in and she was delivered in a few hours of a normal baby. Dr. Baer had prevented most of the actual bearing down pains by terminating labor at the onset of the second stage by the application of low forceps. The patient had a normal puerperium.

Later a breast abscess developed. A fecal fistula followed the first attempt to close the intestinal stoma, but eventually the patient left the hospital well, apparently none the worse for her trying ordeals, the abdominal wall closed and firm, and the intestinal tract normal clinically and on roentgen-ray examination.

This case seems worth reporting for several reasons:

Major surgical complications during the final days of pregnancy, although far from being unheard of, are nevertheless not common.

The patient went through delivery unaided except for low forceps, without any difficulty or injury to the healing of a recent abdominal incision.

It is very unusual for a high-lying intestinal obstruction to progress with so little shock and so infrequent vomiting as in this case. The signs and symptoms here were those of an acute gallbladder disease.

Judging from the patient's reaction after the first operation and especially following the secondary resection, we feel that a primary resection with anastomosis would not have been withstood. We feel that the patient owes her recovery to a great extent to the conservative operative treatment. We wish to emphasize this point.

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STRABISMUS AS A SYMPTOM IN CONGENITAL SYPHILIS *

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The incidence of such eye conditions as interstitial keratitis (corneal opacities) and, to a lesser degree, of optic atrophy, in congenital syphilis, is well known. Paralyses of cranial nerves are frequently listed in textbooks as lesions of the nervous system in this disease. Strabismus by itself is not mentioned as a symptom of congenital syphilis in most of the textbooks of pediatrics and syphilology.

Strabismus of one or of both eyes in acquired, adult syphilis of the nervous system is, of course, well known as a presenting complaint, or symptom.

Jeans[1] found that in his series the central nervous system was involved in congenital syphilis in about one third of the cases, which was about the same incidence reported in the literature reviewed by him.

At Stanford Children's Clinic we have had a number of patients suffering from congenital syphilis and strabismus, in some of whom the latter was the presenting complaint. In the majority of these the spinal fluid Wassermann reaction was negative, and so in these cases the strabismus was probably not dependent on syphilitic disease of the central nervous system. Presumably, then, strabismus may be due to other conditions than to oculomotor or abducens paralyses. Eye lesions such as retinal atrophy, wherein vision may be nearly absent, and corneal opacities, in which vision is impaired, might cause it. The mechanism here is possibly one of disuse of the eye muscles in coordination, similar to the strabismus of a blind eye.

In the last year we have seen twenty-seven patients with late congenital syphilis. Of these, seven, or about 26 per cent, had evidence of strabismus, and in two it was the complaint for which the patient visited the clinic. In two the spinal fluid gave a positive Wassermann reaction; in five it was negative. The blood Wassermann reaction was positive in all seven patients. Of the five having negative spinal fluids, there were three in whom no other eye conditions were found; in one there was present a spotted, pigmented fundus, such as is often seen in congenital syphilis; in the other there were present corneal opacities (interstitial keratitis) and retinal atrophy. Both of those with positive spinal fluid Wassermann reactions had optic atrophy, one being severe, one peripapillary only. The last mentioned patient had, in addition to the peripapillary atrophy, corneal opacities as well.

In two of our cases the blood Wassermann reaction was taken because of the strabismus as a presenting complaint, and the other eye lesions were not suspected or searched for until the return of the positive blood Wassermann report.

The youngest of our seven patients was 3½ years of age; the oldest was 14.

During the same one year period we of course observed cases of strabismus in children in which syphilis was not associated, but because it may occasionally be due to or associated with this disease, we enter a plea for a blood Wassermann test on every child suffering from strabismus.

* From the Division of Pediatrics, Stanford University School of Medicine.

1. Jeans, P. C.: Cerebrospinal Involvement in Hereditary Syphilis, Am. J. Dis. Child. 18: 173 (Sept.) 1919.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

LIVER EXTRACT NO. 343.—A water-soluble, nitrogenous, nonprotein fraction obtained from fresh mammalian liver. It is supplied in vials containing an amount of powdered extract (3 to 4 Gm.) representing 100 Gm. of fresh liver.

Actions and Uses.—Liver extract No. 343 is used in the treatment of pernicious anemia. Only preliminary observations have been made concerning its value in conditions other than pernicious anemia; apparently it is of value in some other types of anemia, but definitely seems to be of little or no value in many cases of ordinary secondary anemia.

Dosage.—Liver extract No. 343 is administered orally, the contents of one vial being dissolved in about 30 cc. (1 fluidounce) of water, orange juice or other vehicle. Exact knowledge concerning the daily dose is yet to be determined. Many patients have improved promptly while taking daily the contents of three vials of liver extract No. 343, but as a rule not so rapidly as other patients taking double this amount. The optimum daily dosage appears to be the contents of from six to eight vials. Very large amounts have been given for some days without causing untoward consequences, but may possibly stimulate the blood-forming organs to an undesirable degree.

It may be advisable to give daily to very sick patients the contents of eight vials for the first ten days, after which time the amount may be reduced. As an initial daily dose for the average case, the contents of three to six vials is proposed. This amount is to be taken until the number of red blood cells returns to normal. The maintenance dose required has not yet been determined, but it appears that the use of the extract (or of liver) must be continued to prevent relapse. For the present it is advised that the contents of two or three vials be taken daily and that the patient and his blood be examined at intervals of a month so that the maintenance dose required by the patient may be determined.

Manufactured by Eli Lilly & Company, Indianapolis, under direction of the Committee on Pernicious Anemia of the Harvard Medical School. No U. S. patent or trademark.

To prepare liver extract No. 343, livers from edible animals are ground directly into water, and the mixture adjusted to the isoelectric point (approximately *ph* 5 to *ph* 6). The mixture is then heated to coagulate protein (approximately 80 C.); stirred for thirty minutes, and filtered. The filtrate is reduced in vacuum to a small volume and enough 95 per cent alcohol added to produce a concentration of 70 per cent. The precipitate which is formed is discarded and the filtrate reduced to a small volume; added to absolute alcohol and the precipitate separated, dried in vacuum and powdered.

Liver extract No. 343 is a yellow powder having a not unpleasant taste, almost entirely soluble in water. It is precipitated from the aqueous solution by alcohol and acetone. It is insoluble in ether.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 4, 1928

DIETARY DEFICIENCIES AND INFECTION

Bacteriology as a fundamental science is frequently said to have had its inception about 1880 in the contributions of Koch, Ehrlich and others whose investigations furnished the basis for practical methods of study. Before that time bacteria had been seen and described and certain inquiries made as to their origin and activity. Since that time and up to the present the part played by the growth of these micro-organisms in the causation of disease has been the basis of extensive and profitable research. The conviction has grown, however, that several syndromes, sometimes considered as clinical entities, arise not primarily from the presence of an invading organism but largely as a result of a lack of certain essential constituents of the diet. Scurvy, beriberi, xerophthalmia and pellagra are some of the conditions that may now, with considerable assurance, be classed as deficiency diseases. The far reaching functional and structural alterations characteristic of most of these conditions have in late years stimulated the inquiry into the concomitant change in resistance to bacterial invasion in such pathologic states.

One of the recent studies [1] carried out on this theme has attempted to correlate the production of rickets with the susceptibility to tuberculosis. In the white rat, rickets may be produced with comparative ease. On the other hand, as Grant and her co-workers show again, this animal is highly resistant to tuberculosis when the organisms are given subcutaneously. These investigators fed young rats on rations presumably adequate with the exception of calcium and the antirachitic factor. Rickets regularly appeared, more readily in cloudy weather than in bright. In the group of these animals injected with tuberculosis organisms the disease could be demonstrated not only by microscopic study of the tissues but also by transmitting it to guinea-pigs. The series given the defective ration alone developed rickets but no tuberculosis, while doses of the infecting organisms many times larger than those used in the rachitic group failed to induce tuberculous lesions in a number of rats given an adequate ration. Similar results were obtained when the experimental ration lacked only vitamin D for several generations. Rickets was produced and with it a susceptibility to tuberculosis. It appears from these studies that there is a definite and, in the rat, a marked lowering of resistance to one type of infection, produced as the result of an apparently simple dietary deficiency.

These experiments have some cogent implications. It is not the first demonstration recorded in the literature of a vitamin deficiency resulting in decreased resistance to some bacterial disease. The arresting fact in this instance is that rickets is still a common disease and one that is apparently so intimately connected with bone growth and calcification that the possibility of such an associated infection as discussed above may seem too remote for serious consideration. Such studies show also that the deficiency diseases are not as clearly defined as has heretofore been assumed. Again, the fact that the white rat, ordinarily so resistant, can be infected with tuberculosis indicates that mammals as a group probably differ not so much in kind as in degree —a further justification of the use of lower animals in experimental medicine.

1. Grant, Agnes H.; Suyenaga, B., and Stegeman, D. E.: Am. Rev. Tuberc. **16**: 628 (Nov.) 1927. Grant, Agnes H.; Bowman, J. A., and Stegeman, D. E.: Ibid. **16**: 642, 1927.

THE COST OF BURIAL

In May, 1926, a distinguished committee of educators, economists, physicians and clergymen was formed to undertake a study of burial costs in the United States. These items have expanded so greatly that they are out of all proportion to any factors in human existence. While the annual number of deaths rose but 2.3 per cent between 1900 and 1920, the number of undertakers increased 51 per cent. This tremendous increase meant a parceling out of the work on such a scale that the individual undertaker had to charge much more in order to make enough to cover his overhead expense. Furthermore, it was found that 50 per cent of the funerals in any locality are handled by from 10 to 25 per cent of the undertakers. In New York City, 44 per cent of the burying is handled by 8 per cent of the 2,000 undertakers, so that the other 92 per cent average two funerals a month. This competition brings into the situation shady trade practices, such as the marking up of caskets and the advertising of cheap funerals as bait.

A study of hundreds of instances in New York, Brooklyn, Chicago and Pittsburgh indicated that the average cost of burial takes from 52 to 62 per cent of all estates under $1,000 and from 15 to 18 per cent of estates under $5,000. The average cost of burial in thirty-six states was $363. For cities, the highest cost was in Newark, N. J., with $493; and the lowest, Nashville, Tenn., with $233. The undertaker is promoting his own income in many instances at the expense of those who can poorly afford the demands made on

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them, and this at a time when emotionalism, grief and sentiment make the human being incapable of careful reasoning.

In some foreign countries, burial and funeral arrangements are regarded as a public utility which must be controlled and regulated to some degree by the state. Nowhere in Europe, even where public control is lacking, does commercial enterprise in funeral management reach the scale that has been achieved in the United States. London, with a population of almost 8,000,000, has 800 undertakers. New York, with a population of 6,000,000, has 2,000 undertakers. The situation in the United States is giving concern to philanthropists and, indeed, to the undertaking profession itself. The complete report [1] of the committee ends with the recommendation that the public be organized through representatives in insurance companies, civic and welfare agencies, and similar bodies to cooperate with the undertaking industry, in order that fair play may be assured and an efficient and economic service provided.

SCHIRESON—THE DISGRACE OF ILLINOIS

Henry Junius Schireson, self-styled plastic surgeon and advertiser, with a professional record that reeks to heaven, and, by the grace of the state of Illinois, a practicing physician and surgeon in Chicago, once more appears in the public prints. The Chicago papers for February 1 give the story of a young woman who is in a critical condition, with both her legs amputated above the knees. The amputation was performed by a reputable physician in the hope of saving the young woman's life, which was endangered by gangrene said to have followed an operation by Schireson. The newspaper report declares that the young woman originally went to Schireson to have a burn on one of her shoulders treated and that Schireson suggested at the time that he straighten her legs. The operation, apparently including sawing through the tibias, was performed at an osteopathic hospital.

In order that the medical profession may have an idea of Schireson's professional history, THE JOURNAL gives herewith a brief summary of some of the material that has been collected over a period of years on Henry Junius Schireson. These data, it should be said, have been presented in the past to the Illinois authorities, but Schireson still retains his Illinois license. This material shows:

1. That in 1911 Schireson, with some other individuals, incorporated the "Shirpost Medical Office" in Chicago, a quack concern that catered to the foreign element and also seems to have been connected with the "European Medical Institute" ("People's Medical Dispensary") of Cleveland, Ohio.

2. That in 1911, also, Schireson seems to have been running a "medical institute" in Scranton, Pa.

3. That in January, 1911, Schireson applied to the Illinois State Board of Health for a license by reciprocity on the basis of a license issued to him by the Vermont State Board of Medical Registration in February, 1909.

4. That in his application Schireson attested that he took his first and second years in medical college at the Maryland University from October, 1902, until May, 1904, inclusive.

5. That investigation at that time by the Illinois State Board of Health showed that Schireson had never attended Maryland University for the school year 1902-1903, but did enter Maryland University as a freshman in October, 1903, and failed in all branches except histology and medical jurisprudence.

6. That Schireson further attested in his application that he took his junior and senior years in Maryland Medical College, attending from October 1, 1903, to May 3, 1906, inclusive.

7. That investigation by the Illinois State Board of Health at that time showed that Schireson was *not* in attendance at the Maryland Medical College for 1904-1905, but he did attend one course of lectures at that college in 1905-1906, and was given a diploma from that school in 1906.

8. That on June 9, 1911, the *State Board of Health of Illinois unanimously rejected the application of Henry J. Schireson for a license.*

9. That in October, 1912, the secretary of the Michigan State Board of Registration wrote to THE JOURNAL stating that Henry J. Schireson, who had been arrested in Detroit in May, 1912, had "jumped his bail" and left the state.

10. That in the same letter the Michigan authorities stated that Schireson's license in Michigan, obtained through reciprocity with Vermont, had been obtained on the basis of some credentials that were forged. Because of this, Schireson's Michigan license was canceled.

11. That from Detroit Schireson went to Pittsburgh, and that when the Michigan authorities attempted to get him back into that state for prosecution, Schireson successfully avoided extradition.

12. That in Pittsburgh Schireson ran an advertising office and paid "protection" to two county detectives. Schireson was convicted and sentenced to ten months in the workhouse. After serving two months of his sentence, he was pardoned because he turned state's evidence and aided in the conviction of the officials to whom he had paid "protection money."

13. That New York papers in May, 1914, recorded Schireson's arrest in that city on the charge of practicing medicine without a license.

14. That the records on file in the Court of Special Sessions, City of New York, show that in June, 1915, Schireson was sentenced to six months in the penitentiary (without the option of a fine) for violations of the penal law of the state of New York extending over two years.

15. That the Report of the New York State Industrial Commission for 1916 records that Schireson, after leaving the penitentiary, opened an office in Utica under the name of "Dr. Fanning," and, according to the Report, "succeeded in swindling the immigrant population of Oneida County of $36,000 in six weeks"; also that at the same time he opened an office in Schenectady, where he accumulated $14,000; that he was then indicted in Utica, but fled, Fanning being sentenced for his part of the swindle.

16. That Schireson obtained a diploma from the notorious "diploma mill" in Kansas City, Mo., the "Kansas City College of Medicine and Surgery," and in 1922 obtained a license in Connecticut through the Eclectic Board of that state. In the early part of 1924, this Connecticut license was revoked on the ground of "fraud and deceit."

17. That in the latter part of 1921, or the first part of 1922, the Department of Registration and Education for the State of Illinois, in spite of the state's previous action on Schireson's application for licensure and its record of Schireson's lack of educational requirements, granted him a license to practice medicine in the state of Illinois. This license seems to have been granted during the incumbency of the notorious director of the department, W. H. H. Miller, who later was convicted of the fraudulent sale of medical licenses, fined $1,000, and removed from his position.

1. Gebhart, J. C.: The Reasons for Present-Day Funeral Costs, Advisory Committee on Burial Survey, 52 Vanderbilt Avenue, New York.

18. That after leaving the "museums of anatomy" schemes, Schireson posed as a specialist in plastic surgery, and the straightening of cross-eyes, and that instead of paying for newspaper advertising, he seems to have hired a press agent. Early in 1924, one Victor Rubin brought suit against Schireson for $50,000, on the charge that Schireson had employed him (Rubin) as a press agent on the basis of $500 a month for three years and 25 per cent commission on all business procured through Rubin's instrumentality. Rubin claims to have been the one who persuaded Fannie Brice, the actress, to submit to an operation by Schireson and also to have caused other well known persons to submit to operations which brought much newspaper publicity. Rubin charged that Schireson failed to pay him the $500 a month and 25 per cent commission, hence the suit.

19. That in 1924, Schireson was sending out letters to the editors of country papers, stating that his specialty was eye, ear, nose and throat, and claiming to have corrected thousands of cases of cross-eyes without a single unsuccessful result. That if the editor would select an indigent or orphan cross-eyed child, he would operate on the child for nothing. He enclosed with his letter to the editor some "before-and-after" pictures.

20. That in the spring of 1927, Schireson sent a letter to "Mrs. Leland Stanford, Jr." at Stanford University, California, telling this hypothetic lady that plastic surgery would remove her crows' feet, drooping eyelids, moles, double chin, etc., and that she should write and receive by return mail Schireson's proofs of the efficacy of the art of rejuvenation. Of course, there never has been a "Mrs. Leland Stanford, Jr." Leland Stanford, Jr., died several years ago at the age of sixteen.

21. That in the spring of 1927 Schireson was getting a large amount of newspaper publicity in connection with alleged surgical work he was doing on the legs of the notorious "Peaches" Browning.

22. That for the past year or two Schireson has been carrying what are obvious advertisements in a sheet published weekly in Chicago, supposed to be devoted to the theatrical activities of the city.

During the last few years, patients claiming to have been mutilated by Schireson's "plastic surgery" but unwilling to seek recourse in the courts, because of the shame attendant on publicity, have presented their cases to the American Medical Association and to various state authorities. How much longer will Illinois tolerate Henry Junius Schireson?

Current Comment

BATHROOM HEATER AS A "PATENT MEDICINE"

In the heyday of the "patent medicine" business no more startling therapeutic merits were claimed for poor whisky masquerading as the sovereign remedy of some ancient Indian chief than are being made today for glorified modifications of household electrical appliances. Electric heaters, dignified by the name of infra-red generators and adorned with enamel and nickel, are being sold to the public at high prices as potent therapeutic agencies. The book of uses which always accompanies a bathroom heater when it is sold as a therapeutic agent usually appears to be the work of one whose chief qualification was that he had access to a medical dictionary. True, these lamps generate infra-red rays, but so does a steam radiator or any other hot body. Whatever therapeutic merit they possess is due to the radiant heat which the patient absorbs. The radiation from these highly ornate heaters is not fundamentally different from that emitted by the common variety of bathroom heater. Much of the reputed curative value of the highly adorned bathroom heaters, electric toasters and incandescent lamps can doubtless be attributed to their fancy names and gaudy ornamentation.

DEGENERATION OF THE MUSCLES IN RESPIRATORY DISEASES

Death has been defined physiologically as an irreversible change in living matter, a change for which the organism cannot compensate. The extent to which any chemical, physical and physicochemical changes in living matter occur in an irreversible manner is exactly proportional to the extent to which protoplasm, suffering such changes, is to be regarded as partially dead.[1] Such definitions, applicable to living protoplasm, afford little satisfaction when referred to the body as a whole; that is, to a functioning complex organism. The latter may experience a permanent breakdown because some vital part wears out, although many tissues and cell masses may still retain a working capacity. The mechanisms involved in the circulation and the respiration represent parts of the organism that are outstanding in their susceptibility to functional collapse; and when the latter occurs the remaining tissues ultimately die because they are deprived of the factors essential for tissue respiration. In various types of disease involving the respiratory apparatus, the breakdown has been ascribed to a diversity of immediate causes. The circulatory organs, notably the heart, may fail, so that the respiratory collapse follows the inability of the respiratory center to secure oxygen and maintain its functional capacity. Death through respiratory failure may be due to exhaustion of the centers such as attends dyspneas of certain sorts. The centers may be poisoned by products of exogenous or endogenous origin. Somewhat novel is the evidence that changes in the diaphragm may become a factor in causing death in pneumonia and some other conditions. Wells [2] of the University of Chicago has recently pointed out that waxy degeneration of the fibers of the muscles of respiration, especially the diaphragm, is usually present in fatal cases of lobar pneumonia. It is also conspicuous in guinea-pigs that have died of anaphylactic asphyxia, and has been found in fatal cases of human anaphylaxis. Waxy degeneration is known to appear in muscles excessively stimulated and in asphyxiated muscles. Lactic acid, which is ordinarily destroyed as soon as it is formed in the process of muscular contraction, may accumulate in the tissues under asphyxial conditions and during anoxemia. Wells has shown that whenever overproduction, underelimination or underoxidation occurs, typical waxy degeneration of muscle fibers may ensue.[3] The condition can be produced experimentally by excessive stimulation of

1. Mitchell, P. H.: A Textbook of General Physiology, New York, McGraw-Hill Book Company, 1923.
2. Wells, H. G.: Waxy Degeneration of the Diaphragm: A Factor in Causing Death in Pneumonia and in Other Conditions, Arch. Path. & Lab. Med. **4**: 681 (Nov.) 1927.
3. Wells, H. G.: J. Exper. Med. **11**: 1, 1909.

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voluntary muscle. Wells [2] concludes that waxy degeneration of the respiratory muscles in pneumonia is, at least in part, the result of overwork and asphyxia of these muscles, and that this degeneration of the muscles may be of importance in the production of respiratory failure in pneumonia and in other diseases requiring severe respiratory effort. He adds that a study of the entire muscular system in a series of cases of pneumonia, correlated with careful clinical observation, not only on the rate of respiration but also on its character in respect to the relative participation of the thorax, abdomen and diaphragm, the presence or absence of cyanosis, the alkali reserve and other features of the respiratory mechanism, is needed to determine the real importance of the changes in the muscles in respiratory diseases.

Association News

CONFERENCE ON PUBLIC HEALTH

The second annual Conference on Public Health, under the auspices of the American Medical Association, will be held at Association headquarters, 535 North Dearborn Street, Chicago, March 30 and 31, 1928. Representatives of official public health agencies, voluntary agencies and various medical groups will be in attendance.

THE MINNEAPOLIS SESSION

Exhibit by Section on Diseases of Children in the Scientific Exhibit

Previously, certain sections of the scientific assembly, notably the Section on Dermatology and Syphilology, have had section exhibits at the annual session of the American Medical Association. The Section on Diseases of Children will be represented in the Scientific Exhibit at Minneapolis. The exhibit proposed by this section is among the three section exhibits which this year will utilize this interesting method of emphasizing certain current scientific subjects. The topics to be presented are: (*a*) Effects of Vitamins as Applied to Infant Feeding, and (*b*) Milk and Its Modifications. It is the purpose to make the exhibit of interest and value to the profession at large, as well as to the members of the section. The members of the specialty are requested to take an inventory of the materials which might illustrate phases of these subjects and communicate with the chairman of the committee, Dr. F. W. Schlutz, 121 Millard Hall, University of Minnesota, Minneapolis. All applications must be made on the regular application form, which is the one required by the A. M. A. Committee on Scientific Exhibit. These may be obtained either from the chairman of the section exhibit, Dr. Schlutz, or from Director, Scientific Exhibit, 535 North Dearborn Street, Chicago. Applications should be filed not later than March 1 with Dr. Schlutz. The complete personnel of the Committee on Section Exhibit of the Section on Diseases of Children will be announced in a forthcoming issue.

Study of Anatomy Trains Observation.—The study of human anatomy might be made a great training school in observation. Too often, instead of stimulating this, it tends to stultify it by leading to a slavish attempt to make the dissection fit the book—to dissatisfaction instead of satisfaction at the discovery of anything unexpected and unusual, to ignoring it instead of magnifying it and making the observation of the divergence the starting point of a further investigation of its why and wherefore. In science and in life what you expect is not interesting—the interest is in the unexpected. —Paton, D. N.: *Edinburgh M. J.* **35**:3 (Jan.) 1928.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—Dr. Robert C. Coffey, Portland, Ore., was guest of honor at a dinner in the new home of the San Francisco County Medical Society, January 24, where he gave an address on "Peptic Ulcer." Dr. Coffey spoke at Stanford University School of Medicine and at the University of California Medical School, and was entertained at dinner by the Pacific Coast Surgical Association, January 23.

Food Clinic.—A clinic to demonstrate the place of dietetics in the treatment of diseases was held at Lane and Stanford Hospital, San Francisco, January 16-28, under the auspices of the Stanford University School of Medicine and the California Tuberculosis Association. The morning sessions were for physicians only; the afternoon conferences were for dietitians, social workers and public health nurses, and the evening sessions were open to the public. The director of the clinic was Miss Frances Stern of the Boston Dispensary, Boston; among those presiding were Drs. William Ophuls, Frank W. Lynch, George E. Ebright and Richard G. Brodrick; among the speakers were Dr. Alonzo E. Taylor of Stanford University on "Normal Diet"; Dr. Alice F. Maxwell, professor of obstetrics, Stanford University School of Medicine, "Prenatal and Diet of the Nursing Mother"; Dr. Langley Porter, University of California Medical School, "The Runabout Child"; Dr. William C. Hassler, "The School Child"; Dr. Hans Lisser, University of California Medical School, "Obesity," and Dr. Arthur L. Bloomfield, Stanford University School of Medicine, "Diet in Disease." The sessions for physicians only were addressed by Drs. Bloomfield, Thomas Addis, Walter W. Boardman, Lisser, Harold K. Faber, William P. Lucas, and Dwight E. Shepardson. Miss Stern demonstrated at each lecture with a patient the service of a food clinic in carrying out the diet prescribed by the physician.

IDAHO

Personal.—Drs. William F. Passer, Twin Falls, and George F. Ashley, Montpelier, have been appointed members of the state medical board, and Drs. Frank W. Almond, Boise, Delos E. Cornwall, St. Maries, and Charles F. Hanmer, Salmon, reappointed members of the board for 1928.——Dr. Harold W. Stone has been elected president of the Boise Physicians' Club for the ensuing year to succeed Dr. Leo W. Chilton.——At a recent meeting of the South Side Medical Society, Twin Falls, Drs. Blair Holcomb and Guy L. Boyden of Portland, Ore., read papers on "Diabetes in Children" (illustrated with moving pictures) and "Sinus and Ear Infections as a Cause of Systemic Disease in Children," respectively.——Dr. George H. Lowthian, formerly of Milbank, S. D., has joined the staff of the veterans' hospital at Boise, succeeding Dr. William S. Titus, resigned.——Dr. C. S. Stone was elected president of the staff of the Providence Hospital, Wallace, at the annual meeting and banquet, January 11.

KANSAS

Hospital News.—The Menninger Psychiatric Hospital and Sanatorium at Topeka opened a new fireproof building about January 1 which increases the capacity of the hospital to a total of thirty-five beds.

Personal.—Dr. T. Restin Heath, formerly medical superintendent of the Flint-Goodridge Hospital, New Orleans, has been appointed superintendent of the Bethany Hospital, Kansas City.——Dr. Claude C. Lull, Topeka, for the last fourteen years county physician, will give up that work with the installation of a full-time county health department, and has notified the commissioners that he will not accept a full-time appointment.——Dr. Ferdinand C. Helwig has been appointed pathologist of the St. Luke's Hospital, Kansas City.

Society News.—Members of the Saline County Medical Society were guests at the home of its president, Dr. Charles M. Fitzpatrick, Salina, Dec. 7, 1927.——The Lyon County Medical Society reports that about thirty physicians took the university extension course in pediatrics given by the Medical Department of Kansas University by Dr. Wayne A. Rupe,

St. Louis. —The sixth annual Kansas City Fall Clinical Conference will be held, October 9-11, in the new Shrine Temple, Eleventh and Central streets, and the program is to be of particular interest to the general practitioner.

KENTUCKY

Bills Introduced.—Senate bill 17 provides that any action against a physician or surgeon for negligence or malpractice must be commenced within one year after the alleged negligence or malpractice. House bill 38 amends the Workmen's Compensation Act so as to increase the allowance for medical aid to $200, and to $400 where the board shall direct an extension of the period of the treatment. House bill 75 provides that no doctor, physician or surgeon shall testify concerning any information acquired by him from any person to whom he may render professional service without the consent of such person.

MARYLAND

Society News.—Dr. Emil Novak, Baltimore, among others, addressed the Baltimore City Medical Society, January 6, on "Treatment of Incomplete Abortion," and Dr. Joseph C. Bloodgood, Baltimore, on "Tissue Diagnosis in the Operating Room"; Dr. Maurice Feldman, Baltimore, gave a lantern demonstration before the society, January 20, on "Oral Cholecystography with Reference to Data Obtained in Experiments with Animals"; Dr. William E. Gye of Manchester, England, and at present at the Medical School of Harvard University, Boston, addressed the society in December on "The Cancer Problem."——Dr. Alfred Stengel, Philadelphia, gave a clinic, January 19, under the auspices of the division of medical extension of the University of Maryland, and Dr. Oliver H. Perry Pepper, Philadelphia, held a medical clinic.——Drs. William J. Mayo, Rochester, Minn., and Alexis Carrel, New York, were guests of honor at a dinner at the Maryland Club, January 16, previous to their addressing the Johns Hopkins University School of Medicine on "The Splenomegalias" and the activities of tissue cells, respectively.

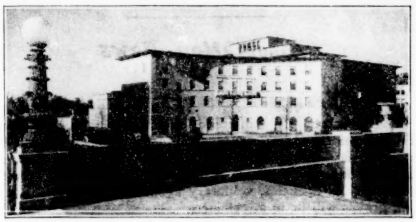
Health on the Air.—Under the auspices of the committee on public instruction of the state medical society of Maryland, health talks are broadcast Monday nights at 7:10 from Station WCAO, Baltimore. The talk, January 30, was on "Whooping Cough" by Dr. Benjamin Tappan, medical director, Baltimore Babies Milk Fund Association; February 6 will be "Protecting the Health of the School Child," Dr. Robert H. Riley of the state department of health; February 13, "Diphtheria," Dr. Charles Hampson Jones, Baltimore City health commissioner; February 20, "Tonsils and Adenoids," Dr. William Raymond McKenzie, Baltimore; February 27, "Blood Pressure," Dr. Norman B. Cole, assistant in clinical medicine, Johns Hopkins University School of Medicine; March 5, "Toxic Goiter," Dr. William F. Rienhoff, Jr., instructor in clinical surgery, Johns Hopkins University School of Medicine; March 12, "Emergencies in Nose and Throat Practice," Dr. Edwin N. Broyles, instructor in clinical laryngology, Johns Hopkins University School of Medicine.

MASSACHUSETTS

Hospital News.—The first cancer conference and round table discussion was held at the Pondville State Hospital, Norfolk, Dec. 15, 1927; the speakers were Drs. George H. Bigelow, Herbert L. Lombard and Ernest M. Daland.—— Dr. Joseph A. Capps, clinical professor of medicine, University of Chicago Medical School, will address a staff meeting of the Massachusetts General Hospital in the Moseley Memorial Building, Thursday evening, February 9, on "Pain in the Pleura, Peritoneum and Pericardium." Physicians, students and nurses are invited.

Dr. Frost Gives Cutter Lectures.—The annual Cutter lectures on preventive medicine were given, February 2-3, at the Medical School of Harvard University, Boston, by Dr. Wade H. Frost, surgeon, U. S. Public Health Service, on "Infection, Immunity and Disease in the Epidemiology of Diphtheria with Special Reference to Some Studies in Baltimore" and "Some Conceptions of Epidemics in General." These lectures are given under the terms of a bequest from John C. Cutter which provides that they be delivered in Boston and be free to the medical profession and the press.

Harvard's Medical Dormitory—Vanderbilt Hall.—The first dormitory to be erected at a medical school in this country, as a part of the school and for medical students only, was recently dedicated at Harvard University. The structure includes several buildings and has a central court yard, large enough for tennis or hockey, which, when the building is enlarged as it may be to accommodate 400 students, will be entirely enclosed. The bedrooms are in pairs, one having a fireplace; two students can have their beds in one room and their desks in the other, or they can close the connecting door and live each man by himself; in the corners of the buildings are more elaborate suites with separate studies and bedrooms. There is a lobby in the wing nearest the medical school and to the right a large dining hall. The culinary department is said to be "about perfect." A dining room on the second floor is connected with the kitchen, so that small society dinners can be served with ease. There is a large living room to the left of the lobby, with a fireplace and piano. In the basement of the other wing is a gymnasium large enough for basket ball and above it five squash courts. The students regard the dormitory as their "club house" as well as home. It has been in use for several months, and thus far has proved a great success. Harold S. Vanderbilt contributed more than half of the cost, and in his honor the building was named Vanderbilt Hall. Dr. Elliott P. Joslin



is said to have devised the plan and 1,519 physicians contributed $120,000. Among the speakers at the dedication were Mr. Vanderbilt, Dr. Charles H. Best, Toronto, Ont., codiscoverer of insulin, and George E. Vincent, Ph.D., president of the Rockefeller Foundation, New York; Dr. Philemon E. Truesdale, Fall River, president of the Harvard Medical Alumni Association, presided, and Dr. Joslin presented the key of the building to representatives of the university (THE JOURNAL, May 9 and Aug. 29, 1925).

Bills Introduced.—Senate bill 148 provides that the fee for a physician for attending as a witness before the Department of Industrial Accidents, or before a member of such department, shall not be less than $25 a day, and mileage of 5 cents per mile. Senate bill 188 provides a state fund for the protection of employees engaged in extra hazardous employments. Injured employees shall be entitled to receive such medical, nursing and hospital service, artificial appliances and medicines as may be necessary to treat any particular case. The fees of physicians and the charges of hospitals for services under this bill will be subject to the approval of the department. H. T. N. 9 provides that a committee shall be appointed to consolidate and arrange the laws pertaining to the practice of pharmacy, the conduct and operation of drug stores, and the sale of drugs, medicines, poisons and narcotics. This committee shall present a report to the legislature on the first Monday of January, 1929. House bill 492 provides that in any disputed case before the Department of Industrial Accidents and in which the employee has, at his own expense, caused a physician to appear and testify in his behalf, and the physician is in favor of the employee, the reasonable cost of the physician so testifying shall be added to the amount awarded. House bill 572 amends the Workmen's Compensation Act to provide that when an employee selects a physician the reasonable cost of his services shall be paid by the insurer subject to the approval of the department. Such approval shall be given only when the services were adequate and the charges reasonable. House bill 595 is an attempt to abolish compulsory vaccination of school children. House bills 596 and 597 make it unlawful to sell any vaccine that contains any bacilli of tuberculosis or tetanus, or any impurities. House bill 600 provides that schools of embalming may obtain a cadaver for experimental purposes under the same conditions as medical schools. House bill 748 provides that any action against physicians or surgeons for malpractice must be commenced within two years after the cause of action accrues. House bill 786 provides that every pharmacy or drug store shall be owned by a licensed pharmacist and that no corporation or partner-

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ship shall own a pharmacy or drug store unless all of the persons are licensed pharmacists, except such drug stores or pharmacies as may be in existence at the present time. House bill 787 enlarges the Massachusetts cosmetic law. The term cosmetic is defined to include any substance which is either wholly or partly for external use for improving or conditioning the face or hands. Certain substances are prohibited from being used in cosmetics while the contents of certain other substances must be declared on all labeling and advertising. House bill 789 provides that every physician or other medical practitioner who prepares any drug or medicine for the use of any person for the relief of any disease or illness shall place a label on the bottle or within the container. This label must give the contents and ingredients of the drug or medicine. House bill 790 provides that all prescriptions must be written in the English language and must contain the English names for each medical, chemical, botanic and scientific term or symbol use in such description. The scientific or professional terms may be used in addition if the prescriber so desires. House bill 519 provides that hereafter no person shall be appointed as a local health officer unless he has been licensed as a health officer by the state department of public health.

MISSISSIPPI

Bill Introduced.—House bill 106 provides that any county may establish a hospital for the treatment of persons suffering from tuberculosis if the board of supervisors so authorizes.

Society News.—Dr. Jacob S. Ullman, Natchez, addressed the Homochitto Valley Medical Society, January 12, on "Secondary Syphilis Coextending with Tuberculous Adenitis," and Dr. John W. D. Dicks, Natchez, on "Subphrenic Abscess."——Among others, Dr. Walker L. Rucks, Memphis, Tenn., addressed the Northeast Mississippi Thirteen Counties Medical Society, Starkville, recently, on "Thoracic Conditions in Children," and Dr. Lon W. Dotson, West Point, on "Rat Bite Fever."

NEBRASKA

Personal.—The University of Nebraska conferred the degree of doctor of laws on Drs. August F. Jonas, John E. Summers and William O. Bridges, January 7.

Opposition to Baby Contests.—The Nebraska-Iowa Pediatric Society recently voted to oppose in principle all clinics, conferences and baby contests in which infants and children are examined in groups and which are not conducted strictly as charity work and confined to children definitely in need of charity. The society pointed out that there are three major objections to such conferences: (1) They are of very little value to the individual child concerned; (2) they are a positively detrimental factor in the welfare of the community; (3) they are unfair to both examining physicians and community physicians who do not take part in them. They possess little value to the child examined because of the inadequacy of the examination, as only obvious defects can be observed in such haste. There is a definite tendency in these clinics and contests to pauperize a community by offering free medical service not limited to those unable to pay and a tendency to develop the habit of free examination with its consequent tendency to state medicine. The class of people ordinarily attending such conferences are not the charity type.

Society News.—A medical history of Nebraska is in the course of preparation under the supervision of Dr. Albert F. Tyler, Omaha, and an advisory committee of representative physicians throughout the state.——The Omaha-Douglas County Medical Society voted with only one dissenting vote to go on record as unalterably opposed to the establishment and operation of clinical and roentgen-ray laboratories by laymen in the city of Omaha. Dr. John E. Summers, Omaha, addressed the society at this meeting on "Symptomatology of Dilated Duodenum."——Dr. John C. Iwersen has been appointed assistant professor of pediatrics and Dr. Robert F. Farrell, assistant in surgery at Creighton University School of Medicine, Omaha.——The banquet of the chapter of Alpha Omega Alpha of the University of Nebraska College of Medicine was held, January 20, at the University Club, Omaha; Dr. Ralph G. Mills, professor of pathology, University of Minnesota Graduate School of Medicine, Mayo Foundation, gave an illustrated talk before the student body of the medical school on "Medical and Scientific Studies in the Orient," and following the banquet gave an address on "Attitude of Progressive Physicians Toward Necropsies."——The Omaha-Council Bluffs Ophthalmological and Otorhinolaryngological Society will meet jointly with the Sioux Valley Eye and Ear Academy at the Fontenelle Hotel, February 15, the speakers will be Drs. Meyer Wiener, St. Louis; Thomas E. Carmody, Denver; Cecil S. O'Brien, Iowa City, and Archibald R. Knode and Waldron A. Cassidy, Omaha; there will be clinics and conferences the following day.——The Nebraska-Iowa Pediatric Society will meet, February 9, at the Ad-Sell Restaurant.——Dr. Frank M. Conlin, Omaha, addressed the Merrick County Medical Society, Central City, January 11, on "Diabetic Coma"; Dr. Herbert H. Davis, Omaha, "Modern Treatment of Emypema," and Dr. Herman M. Jahr, Omaha, "Feeding Problems During the First Year of Life."

NEW JERSEY

Hospital News.—The board of freeholders of Atlantic County are to erect at Northfield a general hospital of 150 beds where all accident cases outside Atlantic City will be taken and provision made for general hospital service.

Infant Mortality at Paterson.—Telegraphic reports to the U. S. Department of Commerce from sixty-nine cities with a total population of about 30 million, for the week ending January 14, indicate that the lowest infant mortality rate in this group was for Paterson which did not report any infant mortality for that period. The infant mortality rate for Paterson for the year 1926 was 64.

Professor Taylor Awarded Nichols Medal.—Hugh S. Taylor, D.Sc., professor of chemistry, Princeton University, will be formally presented with the Nichols medal of the American Chemical Society, March 9, in New York. The award is for that piece of research which, in the opinion of the jury, is most original and stimulative to further research. Professor Taylor was born in England and came to Princeton in 1914. He is noted especially for research in catalysis, and his address will be on "Catalysis As an Inspiration of Fundamental Research."

NEW YORK

Bills Introduced.—Senate bill 224 provides that every asylum or hospital must be equipped with fire alarm boxes of the type and character used in that locality. House T. N. 2 provides for a committee to investigate the drug evil and report to the legislature such revisions of laws as may, in their opinion, serve to remedy conditions. House bill 357 provides that private institutions for the treatment of drug addiction must be licensed by the department of public health.

Olean Rescinds Resolution on Cattaraugus County Laboratory.—The common council at Olean unanimously passed a resolution, recently, rescinding a former resolution that the Milbank Demonstration be required to vacate the offices occupied by them in the city building. Alderman Holmes, who introduced this resolution as well as the former one (THE JOURNAL, January 14), stated that the adoption of the former resolution was without sufficient consideration, and that immediate requirement for other purposes of the offices is not apparent.

Society News.—The Mildred Wimpfheimer Nursery School at Vassar College, Poughkeepsie, will be dedicated, February 6-8, with a conference attended by leaders in child guidance study, among whom will be Dr. Lawson G. Lowrey of the Institute of Child Guidance, New York; Dr. Fritz B. Talbot, Medical School of Harvard University, Boston; Richard E. Scammon, Ph.D., and John A. Anderson, University of Minnesota; Buford J. Johnson, Ph.D., Johns Hopkins University, Baltimore, and Dr. George Draper, Columbia University College of Physicians and Surgeons, New York.——Dr. Franz M. Groedel, Bad-Nauheim, Germany, addressed a joint meeting of the Medical Society of the County of Erie and the Buffalo Academy of Medicine, Buffalo, January 16, on "Historic Development of Roentgen-Ray Examination of the Heart and Circulatory System," illustrated with motion pictures. Dr. Lewis Gregory Cole, New York, will give a motion picture demonstration before the section of medicine of the Buffalo Academy of Medicine, February 8, on pathology of gastric ulcer. Dr. Dean D. Lewis, Baltimore, addressed the surgical section of the academy, February 1, on "Some Aspects of Gastric Surgery"; Dr. Andrew C. Ivy, Chicago, the section of pathology, January 25, on "Physiology of the Stomach," and Dr. George W. Kosmak, New York, the section of obstetrics and gynecology, January 18, on recent developments in the cause and treatment of toxemias of pregnancy.

New York City

Fourth Harvey Lecture.—Wallace Osgood Fenn, Ph.D., professor of physiology, University of Rochester School of Medicine, Rochester, N. Y., will deliver the fourth Harvey Society lecture at the New York Academy of Medicine, Friday evening, February 10, on "The Metabolism of Nerves."

Personal.—Katherine B. Davis, Ph.D., has resigned as general secretary of the bureau of social hygiene to become chairman of its committee on drug addiction with offices at 370 Seventh Avenue; a dinner, proposed by the National Council of Women, was given in her honor at the Waldorf, February 3.——Dr. James H. Huddleson, Jr., has been appointed consulting neuropsychiatrist at the U. S. Veterans' Hospital 81, New York.——Dr. Lester Breidenbach has been appointed adjunct assistant visiting surgeon to the fourth division, Bellevue Hospital.——Dr. Bruno S. Harwood has resigned as head of the sanitary department of the board of health on Staten Island, effective, February 10, and will assume the superintendency of a tuberculosis sanatorium in Sullivan County.——Dr. Paul W. Aschner was appointed senior attending urologist at the Brownsville and East New York Hospital instead of neurologist, as noted in THE JOURNAL, January 28.

Reorganization of Health Department—New Bureau Chiefs.—The mayor has approved the health commissioner's plan in part for reorganization of the city health department including revival of the bureau of public health education, the creation of a bureau of nursing, and the consolidation of the bureau of child hygiene, the bureau of preventable diseases, and the division of adult and industrial hygiene. The heads of these new and consolidated bureaus and departments are to be Dr. Charles F. Bolduan, Miss Amelia H. Grant and Dr. Herman T. Peck, respectively. The health commissioner has been working on a reorganization plan for two years, with the assistance of health authorities outside the health department and the presidents of the county medical societies. Dr. Bolduan entered the health department in 1904. He organized the bureau of public health education in 1914, resigned in 1918, entered the U. S. Public Health Service and is at present on duty at Bremen, Germany. New York City is said to have been the pioneer in public health education, but the bureau has not functioned for several years. Dr. Peck has been in the department since 1899. He will be general medical director of all field medical service performed by the bureau of child hygiene, the bureau of preventable diseases and the division of adult and industrial hygiene, and will continue in general supervision of the health department activities in Brooklyn. The director of the bureau of child hygiene and the director of the bureau of preventable diseases will continue to serve as directors, and their bureaus will be designated as the general division of child hygiene and the general division of communicable diseases, respectively. The consolidation of the medical bureaus is a step in the mobilization of the field force of the health department so as to be more effective in service rendered in schools and clinics and in the supervision of communicable disease along lines that will make them cooperative with the medical profession at large in a strictly preventive capacity.

NORTH CAROLINA

Personal.—Dr. Andrew J. Crowell, Charlotte, was elected president of the state board of health, January 23, to succeed the late Dr. Joseph Howell Way, who held that position for about fifteen years.——Dr. Isaac J. Archer has been elected president of the Black Mountain Chamber of Commerce.——Dr. Oscar L. McFadyen was presented with a gold watch and chain by the Cumberland County Medical Society, January 19, at Fayetteville, in appreciation of his services as secretary. Among the speakers at this meeting were Drs. John T. Burrus, High Point, and Lewis B. McBrayer, Southern Pines, president and secretary, respectively, of the state medical society, and Dr. Charles O'H. Laughinghouse, Raleigh, state health officer.

NORTH DAKOTA

Society News.—The Sixth District Medical Society has appointed a committee of three on "Medical History of North Dakota" with Dr. William H. Bodenstab, Bismarck, as chairman; Dr. Robert W. Henderson, Bismarck, was elected president of the association for 1928.——Dr. Charles MacLachlan, New Rockford, addressed the annual meeting of the Tri-County Medical Society on "Malpractice Suits Without Legal or Moral Foundation Menacing the Practice of Medicine"; Dr. Ralph J. Critchfield, Fessenden, was elected president for the ensuing year.

OHIO

Hospital News.—Dr. John D. Miller was reelected chief of staff of the Good Samaritan Hospital, Cincinnati, for 1928; with the completion of the new wing in September, the hospital obtained a 600 bed capacity.——The $200,000 Belmont County Tuberculosis Sanatorium, which has been under construction for nearly five years, was recently dedicated.

Society News.—Dr. Carl L. McDonald has been elected president of the Academy of Medicine of Cleveland for 1928. Dr. William P. Murphy, Boston, addressed the academy, January 20, on "Primary Anemia" and Dr. George L. Lambright, Cleveland, on "Incipient Myxedema."——Dr. Sylvester J. Goodman has been elected president of the Columbus Academy of Medicine for 1928.

Ex-Interns' Reunion.—For the first time in fifteen years, the ex-interns of the old Cincinnati Hospital will hold a reunion and dinner at the Cincinnati Club, February 21, at 6:30 p. m. More than 100 acceptances to invitations from all parts of the country have been received, and all former interns of this hospital who have not responded are urged to address the secretary, Dr. Sam Zielonka, Doctors Building, Cincinnati, at once. The program, it is said, is full of surprises for all. The committee is composed of Drs. Bachmeyer, Brady, Carson, Freiberg, Howard, Lamb and Zielonka.

OREGON

Personal.—Dr. Elijah B. Pickel, Medford, has been elected president of the Oregon State Board of Health to succeed Dr. Willis B. Morse, Salem; Dr. Harold C. Bean, Portland, vice president, and Dr. Frederick O. Stricker, secretary. The board approved plans, January 19, for the organization of the Oregon State Health Council to serve as a clearing house for all health agencies.

Society News.—Dr. Frederick O. Stricker has been elected president of the Portland Medical Journal Club for 1928, and Dr. Hugh S. Mount, Oregon City, president of the Portland Academy of Medicine.——Dr. Alfred B. Peacock, Marshfield, has been appointed president of the Wesley Hospital staff for 1928.——Dr. Asa P. Starbuck, Dallas, has been reelected president of the Kiwanis Club of that city.——Dr. Moritz Weber of the Henry Foundation for Medical Research of the University of California will address the Portland Academy of Medicine, February 9, on "Osteodystrophia Fibrosa: Clinical and Pathologic Aspects, Etiology and Experimental Reproduction" Dr. Corneille Heymans of the University of Ghent recently addressed the academy on physiology and pharmacology of the vagus and respiratory centers; Dr. T. Wingate Todd, Western Reserve University School of Medicine, Cleveland, on "The Bowels of the Profession," and Dr. Arthur S. Bloomfield, Stanford University School of Medicine, on composition of the gastric juice and the mechanism of its secretion.——It is reported that about sixty-three physicians of Portland have formed a company to construct a health resort hotel and golf course at Collins Hot Springs, near Stevenson, Wash., on the Columbia River, on a tract of more than 30 acres.

PENNSYLVANIA

Low Typhoid Record.—During 1927, typhoid showed a decline of 600 cases below the previous low record of 1924, the total number of cases reported to the state health department being 1,474. In 1926 24,471 cases of typhoid were reported, or 344 per hundred thousand of population, as compared with 15 per hundred thousand of population in the year just closed.

Personal.—Dr. Ralph T. Hill has resigned the superintendency of the Allegheny County Home and Hospital, Woodville, to become assistant superintendent of the state hospital at Wernersville, and will be succeeded in the former position by Dr. George A. McCracken.——Dr. John A. Crewitt presented his resignation as secretary of the board of health of Newtown, January 13.

Malta Fever in Pennsylvania.—The communicable disease bureau of the state health department, announced, January 20, that malta fever had made its appearance in Pennsylvania, two cases having occurred in Lancaster County, two in Delaware County and two in the city of Philadelphia. The advisory board of the health department has regulations requiring physicians to report at once all cases attended by them. The department laboratories make tests for malta fever in all specimens of blood sent in for a Widal test which are negative for typhoid.

Two Schools Cannot Confer Degrees.—Deputy Attorney General Hertzler gave a decision, January 25, to the superin-

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tendent of public instruction to the effect that the Pittsburgh College of Chiropractic and the Eastern College of Neuropathy and Naturopathy of Philadelphia have no power to confer degrees in the state. Pennsylvania, it was said, has authorized the granting of degrees only by institutions incorporated under its own law. The institutions named are both Delaware corporations registered in Pennsylvania and are subject, therefore, to the laws and regulations of Pennsylvania.

Philadelphia

Dr. Keen Honored on Ninety-First Birthday.—The Woman's Medical College of Pennsylvania announced in connection with the recent celebration of the ninety-first birthday of Dr. William W. Keen that a chair of surgery will be named in his honor in the new college to be built at the Falls of the Schuylkill. The sum of $100,000 will be raised to endow the chair. Dr. Keen was for several years professor of surgery at the Woman's Medical College. The announcement of the celebration of Dr. Keen's ninety-fourth birthday in THE JOURNAL, January 28, was premature.

Hospital for Cancer Opens.—The new Jeanes Hospital at Fox Chase, built at a cost of almost a million dollars, was opened, January 25. This hospital, which has been provided with special means for the treatment of cancer, including 100 mg. of radium, was made possible by the beneficence of the late Anna T. Jeanes, whose bequest, with accretions of income, has reached $2,675,768. There are accommodations for eighty-four patients, a dispensary and a home for thirty-two nurses. Dr. James Torrance Rugh, president, Philadelphia Medical Club, delivered the address at the opening ceremony.

RHODE ISLAND

Bill Introduced.—House bill 559 makes appropriation for carrying out the provisions of the state act accepting federal aid in the promotion of the welfare and hygiene of maternity and infancy.

SOUTH CAROLINA

Bills Introduced.—House bill 514 provides for the licensing of chiropractors and the regulating of the practice of chiropractic. House bill 290 provides that shopkeepers may sell in original packages liver pills, headache tablets and calomel tablets.

TENNESSEE

Society News.—The Tri-County Medical Association (Dyer, Lake, Obion) met at Dyersburg, January 12, and was addressed by the president of the state medical association, Dr. William Battle Malone, Memphis, on "Medical Organization," and by Drs. Robert L. Motley, Jr., Dyersburg, Jesse P. Baird, Dyersburg, and William L. Sumners, Ridgley.

University News.—The recent banquet and reunion of the alumni of the University of Tennessee College of Medicine at Memphis is to be an annual event during the meeting of the Southern Medical Association; Dr. Richmond McKinney, Memphis, will be the toastmaster at the next banquet, which will be in Asheville, N. C. The college of medicine will offer a postgraduate course of gastro-enterology beginning February 2 to continue four weeks.

Goiter Survey.—Dr. Robert Olesen, U. S. Public Health Service, who has been assigned to assist in making a study of the incidence of goiter in Tennessee, is expected to arrive in Nashville, April 2. The examinations made by the division of child hygiene in schools in different parts of the state have shown a considerable variation in the incidence of goiter in the various sections.—W. H. Haskell, associate milk specialist of the U. S. Public Health Service, has been detailed to the Tennessee State Health Department for one year to conduct field investigations in milk control work.

VIRGINIA

Bill Introduced.—House T. N. 24 provides for the licensing of chiropractors and the regulation of the practice of chiropractic.

Society News.—Dr. Mark W. Peyser has been secretary of the Richmond Academy of Medicine for about thirty-four years.——The Medical Society of the University of Virginia has just been organized by members of the teaching staff and hospital, and Dr. William E. Bray has been elected president.

Personal.—Dr. John Shelton Horsley addressed the Society of Alumni of Bellevue Hospital, New York, recently, on "Some Underlying Principles of Intestinal Surgery"; he was made an honorary member of the society.——Dr. Irl C. Riggin has presented his resignation as health officer of Norfolk and Princess Anne counties in order to accept a position in Cincinnati.——Dr. Harvie D. Coghill, Richmond, has been appointed director of the Children's Memorial Clinic in that city to succeed Dr. George H. Preston, resigned.——Dr. Philip W. Boyd, Winchester, was elected president of the Virginia State Board of Medical Examiners to succeed the late Dr. Robert Glasgow.

WASHINGTON

Personal.—Dr. John Richter was elected president of the staff of the Shelton General Hospital, Shelton, for 1928.——Dr. DeWitt C. Burkes has resigned from the staff of the veterans' hospital at American Lake.——Dr. W. W. Ballaine has retired as health officer of Bellingham after twenty years of service, and has been succeeded by Dr. Isaac W. Powell.——Dr. Hjalmer M. Berge, Everett, has been appointed county health officer, succeeding Dr. Frederick A. Franke, Snohomish, resigned, and Dr. Leon G. Woodford, Everett, has been appointed consulting physician.

Society News.—Dr. Hiram W. Orr, Lincoln, Neb., will give clinics before the Seattle Orthopedic Club, February 24-25; at the annual meeting of this club in December, Dr. Cline F. Davidson, Seattle, gave an address on "Influence of Internal Secretions on Many Pathologic Changes in Bone."——At the annual meeting of the Seattle Surgical Society, January 13-14, Dr. Verne C. Hunt, Rochester, Minn., conducted clinics at the Providence Hospital, and at the annual dinner spoke on "Obscure Surgical Conditions in the Upper Abdomen"; the Seattle Surgical Society is now eighteen years old.——Drs. Jay L. Durand, Seattle, and Hulett J. Wyckoff, Seattle, addressed the Clallam County Medical Society, Port Angeles, January 9, on infantile paralysis.——The Walla Walla Valley Medical Society held a symposium on bronchiectasis, January 13; the speakers were members of the staff of the U. S. Veterans' Hospital at Walla Walla.——Dr. Hinton D. Jonez addressed the Pierce County Medical Society, Tacoma, January 10, on "Ureteral Stones."

WISCONSIN

Personal.—Dr. Arthur H. Cohn has been appointed chief police department surgeon of Milwaukee.——Dr. Claus T. Droege, New York, has been appointed prison physician of the state penitentiary at Waupun, succeeding Dr. Wallace P. Smith, who held the position since the recent death of Dr. John F. Brown.——Dr. Herbert A. Raube has been appointed city health officer of Beloit until a permanent successor to the late Dr. Lewis M. Field has been selected.——Dr. Gilbert H. Stannard, Sheboygan, was host recently at a roast pig dinner at the regular bimonthly meeting of the staff of the Sheboygan Clinic.

Society News.—Sigmund Fraenkel, professor of medical chemistry, University of Vienna, addressed the University of Wisconsin Medical Society, Madison, January 12, on "Chemistry of the Vitamins."——Dr. Oscar A. Stiennon addressed the Green Bay Academy of Medicine, January 11, at the Bellin Memorial Hospital on "Suggestion in the Practice of Medicine."——Dr. George F. Suker, Chicago, addressed the Brown-Kewaunee County Medical Society, Green Bay, Dec. 15, 1927, on the pituitary gland and optic chiasm.——The Dodge County Medical Society at a business meeting, Dec. 13, 1927, adopted a fee of $5 as a minimum for a periodic health examination.——Dr. William E. Cary, assistant professor of bacteriology, University of Chicago, addressed the Marathon County Medical Society, recently, on "Present Conception of Food Poisoning."——The Marinette-Florence County Medical Society held a symposium on periodic health examinations, Dec. 8, 1927, Dr. Henry F. Schroeder discussing the present status of the work, and Dr. William S. Middleton giving a demonstration of the form and scope of the examination.——At the meeting of the Racine County Medical Society, Dec. 15, 1927, Dr. Roland S. Cron, Milwaukee, spoke on "Complications of Pregnancy and Labor."——Dr. Lester M. Wieder addressed the Milwaukee Academy of Medicine, Dec. 13, 1927, on "Clinical Aspects of Pigmentation," and Dr. Louis M. Warfield on "Value of the Fluoroscope in the Diagnosis of Heart Disease."——Dr. William L. Benedict, Rochester, Minn., addressed the Milwaukee Oto-Ophthalmic Society, Dec. 20, 1927, on "Diagnosis and Treatment of the Orbit."——Dr. L. A. Brouha, assistant professor of obstetrics, University of Paris, addressed the University of Wisconsin Medical Society, Madison, January 19, on "The Follicular Hormone."

GENERAL

Death of Dr. Schroeder.—Ernest C. Schroeder, M.D.V., superintendent of the experiment station, bureau of animal industry, U. S. Department of Agriculture, Bethesda, Md., died, January 24, after an illness of several months, at the age of 63. Dr. Schroeder had been connected with the bureau of animal industry for about forty years, and had made contributions to the knowledge of such animal diseases as contagious abortion, anthrax, dourine, tetanus, tick fever, tuberculosis and vesicular stomatitis.

Spanish Edition of United States Pharmacopeia.—The board of trustees of the United States Pharmacopeial Convention has published a Spanish edition of the tenth revision of the United States Pharmacopeia which is obtainable from the agent, the International Trade Papers, Inc., 2 West Forty-Fifth Street, New York, at $6. The United States Pharmacopeia has been adopted as the official pharmacopeia for the Republic of Cuba, and is extensively used in Central and South America. The translation was made by a committee from the University of Havana with the cooperation of Dr. Jose G. Diaz, who translated the eighth and ninth revisions into Spanish. The committee comprises Drs. G. Garcia Morales, Mesa de Ponce, Sarah Bustillo and Rosa T. Lagomasino.

Amendment to Extend Medical Care of Veterans.—Senator Walsh of Massachusetts introduced in the Senate, January 23, an amendent to Section 202 of the World War Veterans' Act of 1924, extending the free outpatient treatment in veterans' bureau hospitals and dispensaries for any disease or injury, without regard to its nature or origin, to veterans of all wars who now receive a pension or compensation from the government. In submitting this amendment, Senator Walsh stated that the facilities in veterans' bureau hospitals are so complete that no great expense will be entailed by thus extending the provisions of the World War Veterans' Act. He also stated that there are many veterans of the Civil and Spanish American wars and of the Indian campaigns who are living at home and who require periodic medical attention which, under the existing law, they are unable to secure except at hospitals maintained by the Soldiers' Home or by paying for such treatment themselves.

The Government Needs Physicians.—The U. S. Civil Service Commission announces competitive examinations for filling vacancies in the classified civil service throughout the United States in the positions of senior medical officer, medical officer, associate medical officer and assistant medical officer, there being a special need for physicians qualified in tuberculosis or neuropsychiatry. The entrance salaries of these positions range from $2,400 to $5,200 a year. A probationary period of six months is required, advancement after that depending on increased usefulness and the occurrence of vacancies in higher positions. The examination is to fill vacancies in the Indian Service, public health service, coast and geodetic survey, veterans' bureau, Panama Canal and departmental service. All citizens of the United States who meet the requirements may enter these examinations. Papers will be rated as received and certification made as the needs of the service require. Applications will be received until June 29, 1928. The commission announces an open competitive examination for junior medical officer (intern) in the U. S. Veterans' Bureau, for which the entrance salary is from $1,860 to $2,400 a year without allowances, and for which applications must be on file on or before June 30, and an examination for the position of toxicologist in the department of agriculture, the entrance salary for which position in Washington, D. C., is $3,800 a year; applications must be on file with the U. S. Civil Service Commission, Washington, D. C., on or before February 7.

News of Epidemics.—The public schools of Walla Walla, Wash., and several surrounding towns were temporarily closed in December following an outbreak of about fifteen cases of smallpox.——Public schools, churches and places of entertainment in Winfield and New Berlin, Union County, Pa., were closed, January 12, on account of an outbreak of about twenty cases of scarlet fever——Seven persons with trichinosis were reported to the board of health of Emerson, N. J., in December, six of whom, an investigation disclosed, had eaten bologna sausage from a store which the board had visited on several occasions because of its "uncleanliness."——The Butler County Jail, Hamilton, Ohio, was placed under quarantine, January 18, when a case of smallpox was discovered in a prisoner.——An epidemic of measles was reported in the Southmount and Linwood sections of Davidson County, Ky., January 19.——An outbreak of fourteen cases of smallpox was reported, January 17, at Evansville, Ind.——Ten cases of influenza were reported in children in the village of Shale City, Ill., January 19.——An outbreak of several cases of infantile paralysis among the girl students at Stanford University, California, was reported, January 30.——An epidemic of measles was reported in Crockett County, Tennessee, January 14; some of the schools were closed.——Two cases of malta fever were reported at South Bend, Ind., January 13, one at Culver and another near the Indiana-Michigan line.——The measles epidemic in North Carolina amounted to 5,727 cases during the month of December, as compared with 265 cases for December, 1926.

States Give Sixteen Million Treatments in Nine Years.—A report submitted to Congress by Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, emphasizes the prevalence of venereal disease as shown by recent studies by the public health service. During the last fiscal year, 196,000 cases of syphilis and 160,000 of gonorrhea were reported by the state health departments. Nearly 800,000 doses of the arsphenamines were distributed by the state departments, and venereal disease clinics under the control of state health departments during the last nine years gave more than 16,000,000 treatments to more than 1,000,000 patients. Reports collected in a large number of cities from every physician, hospital and other institutions show the actual number of cases of syphilis and gonorrhea under treatment on a given date. It was found that in cities of 25,000 and more, an average of 1.5 per cent of the population was constantly under treatment on account of these diseases. This is said to be the first time that information is available concerning the prevalence of venereal disease in the general population. General Cumming says that there are undoubtedly many cases which are not under treatment, so that the actual total of cases in these communities would be somewhat greater than the 1.5 per cent shown in the studies. For many years, about 20 per cent of all patients treated by the public health service in its marine hospitals have been ill as a result of venereal disease. This percentage was lower in 1926, namely, 17 per cent. The report emphasizes the fact that facilities for treating indigent patients with venereal disease are most inadequate in small towns and rural districts.

When Do Professors Wear Out?—During the twenty-two years that the Carnegie Foundation for the Advancement of Teaching has been active, it has paid out in retirement allowances to professors and in pensions to their widows more than $15,985,000. A total of 929 teachers have retired on allowances from the foundation, and 469 widows have received pensions, according to the annual report. During the year ending June 30, 1927, the average age at which teachers in receipt of allowances from the foundation chose to retire was 68.28 years; for the five preceding years, the average age of retirement was 66.8 years. Fifty professors retiring between 1922 and 1927 at Columbia, Harvard, Johns Hopkins, Princeton and Yale served until an average age of 67.6, those at Yale retiring earliest at 66.1 years and those at Johns Hopkins latest at 68.4 years. The average retiring allowance has risen from $2,126 in 1920 to $2,401 at present. A total of eighty-nine universities and colleges in the United States and Canada are now associated with the foundation for the payment of retiring allowances and pensions; of these, sixty-five contribute equally with their teachers toward the purchase of joint contractual retiring annuities through the Teachers' Insurance and Annuity Association of America, which was organized by the Carnegie Foundation and financed by the Carnegie Corporation about nine years ago. The total resources of the foundation now are $30,857,000, of which $12,428,000 is a reserve for liquidating pension liabilities accruing after 1928; $830,000 is to assist colleges and universities in adopting the contributory plan of retiring annuities, and $601,000 is an emergency reserve. The resources of the foundation increased about $675,000 during the last fiscal year. All its securities are in bonds.

Deaths in Other Countries

Sir Percy W. Bassett-Smith, formerly professor of pathology and lecturer on tropical medicine at the Royal Naval College, Greenwich; president of the Royal Society of Tropical Medicine and Hygiene; author of articles in textbooks on tropical medicine, Dec. 29, 1927, aged 67, of septicemia from an infection acquired at a postmortem examination.——**Sir Dyce Duckworth,** formerly honorary physician to King Edward when he was Prince of Wales, and a member of the General Medical Council of England, Dec. 21, 1927, aged 87.——**Johannes Fibiger,** professor of pathologic anatomy, University of Copenhagen, Denmark, awarded the Nobel prize in medicine for 1926 for research on the association of worms and malignant growths, January 31, aged 61.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 14, 1928.

Disease from Damp Houses

In a lecture on the medical aspects of damp in dwellings, before the Royal Institute of British Architects, Dr. Reginald Miller, a pediatrician, stated that catarrhal diseases of children and young subjects and acute rheumatism in young subjects were all encouraged by damp associated with cold. He suggested that damp in dwelling houses was only one of the many subjects in connection with the building of healthy homes, in which an interchange of opinions might be helpful between those who designed houses and those who treated the maladies that arose in those houses. In producing harmful effects, the closest associate of damp was cold; and, while the dampness of a site entered into the matter, he believed that it was healthier to live in a dry house on a damp site than in a damp house on a dry site. Catarrhal diseases were microbic, but it was thought that a combination of damp and cold had a real influence in determining their onset by lowering the resistance, and repeated colds tended to a persistent infection of the tonsils, known as chronic tonsillar sepsis. The prevalence of chronic rheumatic diseases was shown by the fact that between one seventh and one sixth of all sick pay under the national health insurance scheme was paid for those complaints. There was also acute rheumatism. How much damage it had done in this country was difficult to state, but it was estimated that there were 50,000 children attending the state elementary schools with rheumatic heart disease. Damp houses seemed to play a considerable part in producing the disease and making it more intractable. The position in regard to damp houses was unsatisfactory, and it was not reassuring to be told that building was largely out of the hands of architects. If the by-laws and regulations of the ministry of health and local authorities were as valueless as their investigations suggested, should they be made more stringent or would it not be better to get rid of them and rest on the law of the land, which still ran, he was told, surprising as it might seem, that a house must not be damp?

A Village Settlement for the Tuberculous

The pioneer village settlement for the tuberculous in this country, Papworth, has been described in a previous letter. Health officers from Czechoslovakia, Iceland, Sweden and Jugoslavia, at present in this country on a public health course organized by the League of Nations, have visited Papworth in order to familiarize themselves with the methods that have produced such uniformally successful results in the treatment and after-care of tuberculosis. Dr. Steingrimur Matthiasson of Iceland, speaking on behalf of the visitors, said he had always felt that patients in sanatoriums required purposeful work and the prospect of remunerative employment and he had determined to see Papworth for himself. He felt that Papworth had solved the problem of the after-care of tuberculous patients by enabling them to earn their living under the special conditions of a village settlement.

Fighting the Imported Pests of Australasia

Certain of the plants and animals introduced from Europe into Australasia have so flourished in their new environment as to become serious pests. In a previous letter (THE JOURNAL, Sept. 10, 1927, p. 893) it was shown how this had occurred in New Zealand and that new agents introduced to fight these became pests themselves. However, some of them promised success, such as *Coroebus rubi*, an insect introduced to destroy the blackberry plant, which had become a pest. A similar problem has arisen in Australia. Fifty years ago the prickly pear was introduced into Queensland, at considerable expense, as a hedge plant. It grew so luxuriantly as to take possession of 50 million acres of good agricultural land and render it unavailable for settlers, who could not afford the expense of clearing it, though it was practically offered to them on this condition. The government, in desperation, appointed a scientific commission to investigate the problem with absolute jurisdiction over an area of 51,500,000 acres. About 3,000,000 acres of this land had been abandoned, but the remainder was held by pastoral lessees. The commission secured the cooperation of the lessees by reducing their rentals on condition that they should use the poisons and distribute the cochineal insects which it makes available. More than 10,000,000 acres of country were so densely infested that it was impossible for stock to enter it, and the cost of eradicating the plant by poison would have been far greater than the value of the land. The aid both of biologists and of chemists was sought, and now the spread of the pear has been definitely checked and at least a million acres of land which had been thinly infested has been liberated. Cochineal insects are being used in densely infested areas. The species used is the wild cochineal (*Dactylopius tomentosus*), introduced from the United States. The insects are distributed in cases, placed on the pear, and allowed to breed. The eggs hatch within a few hours, and the purple-red larvae begin to suck away the juice of the pear, which soon begins to wither and die. Even in densely infested areas the insects are killing so much that pathways can be broken through, enabling men to use poison, while they have considerably retarded the usual prolific crops of pear fruit, which were carried by birds and other agencies to clean country. It is only in the densely infested areas that insects are of great value; the more lightly infested areas are being treated with arsenic pentoxide and other poisons, without detriment to the soil. Biologists believe that within a few years the cochineal will have overcome the neglect of half a century.

The Registration of Opticians

The attempts of irregular practitioners, such as osteopaths and opticians, to obtain state registration have been described in previous letters. When a bill was introduced into parliament for the registration of opticians it was referred to a committee, which has presented two reports. The majority, after stating that it was satisfied that in recent years an increasing number of physicians, and particularly the younger men, had been making a special study of ophthalmology, adds: "While we have been forced to conclude that it is not in the public interest that a state register of opticians should be set up, we desire to emphasize that one of the principal reasons on which we base this opinion is our view that it is possible and probable that the medical profession will be able to provide insured persons entitled to ophthalmic benefit with the services of oculists at an early date, and at fees within the limit of the funds from time to time available to approved societies for this purpose. We hope also that such a service will be extended to the noninsured population. If, however, for any reason, these hopes are not fulfilled within a reasonable time, we do not wish our report to preclude the possibility of a reconsideration of the question." The minority report says that from the public point of view the case for state intervention springs from the unfortunate prevalence of ignorant and incompetent opticians. "All the evidence before us has tended to confirm the danger arising from the activities of incompetent persons setting themselves up to prescribe for defects of vision. There seems to be but two ways of dealing with the evil. One is to prohibit entirely any unregulated practice; the other is to provide some form of

identification whereby the public may distinguish between regulated and unregulated practice. The allegations made by some of the medical witnesses against the members of the register of the joint council of qualified opticians is that many of them are not really qualified to diagnose the existence of disease, and the further suggestion is added that disease of the eye is far more prevalent than has generally been supposed. The evidence we have heard does not justify these contentions."

Sir Gowland Hopkins on Dietetics

Sir Gowland Hopkins, professor of biochemistry in the University of Cambridge, the discoverer of vitamins, was presented with the Society of Apothecaries medal at a livery dinner at which the lord mayor and sheriffs were guests. In presenting the medal, the master of the society described the work of Hopkins as having materially influenced all modern treatment. In replying, Hopkins said that the modern science of dietetics was becoming increasingly an important branch of therapeutics. No section of the human race had ever been properly nourished. The race had survived but it was a relative survival. It had got on very well, but still the race suffered from disabilities and discomforts which were quite unnecessary. Many of them depended on continued and age-long malnutrition. It was the function of science to remedy that and he believed that it would be able to do so. A great deal still remained to be done in research with regard to the nutrition of man.

Sunshine and Open Air and Health

Dr. Leonard Hill, F.R.S., director of the department of applied physiology and hygiene, National Institute for Medical Research, lecturing on "Sunshine, Open Air, and Health" said that many people wore too much clothing. Artificial silk let through 50 per cent of the good rays, and he commended the wearing of stockings of that material and of low-necked dresses. They would never, he said, stop the decaying of teeth by the use of a toothbrush. The causes of it were wrong food, overfeeding, and lack of light and the open air. Millions of pounds were being spent on curative medicine which ought to be spent on preventive treatment. All hospitals ought to be provided with open-air balconies with special glass through which rays could be directed on patients in beds wheeled out of the wards.

The British Medical Association and Collective Investigation

The British Medical Association has decided, after an interval of more than forty years, to resume the collective investigation of disease. Many of the reports on collective investigation, which were published first in the *British Medical Journal* and then as separate volumes, received favorable comment. Why the movement collapsed is not quite clear. Under the scheme now adopted, two inquiries will be initiated forthwith—one into the treatment of varicose ulceration and the other into the after-effects of gastro-enterostomy. In the case of varicose ulceration the object is to obtain a general consensus as to the most effective method of treatment. Every division of the association has been asked to obtain the names of as many members as possible who will undertake to share in the investigation. A memorandum explaining the object and scope of the inquiry will be sent to all those who show an interest in respect of every case recorded, and a request for general observations, and conclusions based on individual experience in treatment. In the case of gastro-enterostomy the object is to obtain a sufficient number of reliable histories to establish the relative values of the short-circuiting operations when performed for ulcerous, cancerous or other conditions of the stomach or duodenum. In this problem the starting point is the surgeon's record of the exact nature of the operative procedure undertaken, and accordingly the memorandum and questions have been issued to the surgeons of every hospital of more than 100 beds throughout the country. It is not intended to limit the inquiry to the cases returned by those to whom the memorandum has, as a matter of practical convenience, been addressed in the first instance, and it is hoped that any surgeon who is willing to cooperate in the work will do so.

PARIS

(From Our Regular Correspondent)

Jan. 4, 1928.

The Cultivation of the Tubercle Bacillus in Potable Water

At the Réunion biologique held in Lyons, Fernand Arloing and Dufourt called attention to an observation they had made during their researches on the cultivation of the tubercle bacillus in poor mediums with a view to obtaining strains of attenuated virulence. Distilled water supports few cultures and they die out rapidly. The water termed "potable," supplied by the water-pipes of the city and hygienically wholesome, containing only a few nonpathogenic bacteria, can, on the contrary, be readily used to develop bacilli, and, by cultivating through a series of generations, strains of attenuated virulence can be obtained. Cultivated in ordinary water covered with liquid petrolatum, the bacillus develops a covering membrane through contact with the oil layer. The tubercle bacillus can therefore readily survive in the water contained in the municipal water pipes when it has been deposited therein, and can transmit tuberculosis a great distance to those who drink the water. But it would probably be an attenuated tuberculosis and possibly merely of a vaccinating type.

An International Deratization Congress Proposed

Prof. Gabriel Petit, connected with the veterinary school at Alfort, has emphasized, in a communication presented to the Academy of Medicine, the necessity of an international crusade against rats. The annual damage caused by rats in France is estimated at a billion gold francs. Furthermore, they are a menace to health. Professor Petit recounted the efforts of Denmark to rid itself of rats. He pointed out the advantages and the disadvantages of the virus recommended by Danysz of the Pasteur Institute. He announced that a deratization congress would meet soon in Paris, possibly in April, to study measures to be adopted in all countries by common agreement for the destruction of rats.

Rabies in Paris

For the first time in a number of years, several cases of rabies have been reported in Paris. The prefect of police issued an order requiring greater energy in the capture of stray dogs, particularly in the open districts around the fortified area, where demolition processes are going on. All dogs on the streets must be muzzled.

The Menace of Spoiled Meat

The number of arrests of merchants and butchers for selling unwholesome meat of animals dying a natural death, or of animals slaughtered when in a diseased condition, is increasing throughout France. The sentences imposed are insignificant, and, since the profits are considerable, those convicted pay their fines and begin again. The authorities are considering the need of more stringent laws against the *charognards* (dealers in carrion), as they are termed by the people. In Paris and in the other large cities of France, the meat inspection service is efficient. Last year alone, 2,600 tons of suspected meat was seized in Paris and destroyed. In the city of Paris proper, therefore, the *charognards* do not often take any chances. But in the suburbs and in small

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villages one often sees temporary benches or stalls erected, where meats that have escaped inspection are offered for sale. This meat often comes from small clandestine butchering places which are unknown to the police and the sanitary inspectors, to which the peasants bring at night sick animals to be slaughtered, or even the cadavers of animals already dead. Cooking does not obviate all danger; especially, light broiling is not adequate. The meat may be used raw in sausages, and the heat, while it may kill the germs, does not destroy all the toxins. Also, according to Professor Valleé, the personnel of abattoirs and butcher shops may thus contract, among other diseases, glanders, foot-and-mouth disease, anthrax, tetanus and tuberculosis of the skin.

The Medical Week in Morocco

Conventions such as the regional medical congresses organized under the name of *journées médicales* have been announced to be held at Casablanca and at Rabat, Morocco, April 3 and 8, 1928, respectively, which dates correspond with the short Easter vacation. The main topic on the program will be "Autografts and Heterografts Applied to Man and to Animals, with Especial Consideration of Glandular Grafts." The chief speakers are: Professor Leriche, Strasbourg; Dr. Dartigues, Paris, and the veterinarians Monod, Velu and Balozet, of the animal husbandry service in Morocco. In addition, there will be several addresses by men of note: the B C G antituberculosis vaccine, by Professor Calmette, assistant director of the Pasteur Institute of Paris; anatoxins, by Dr. Ramon; right-sided paracolitis and its diagnosis (appendicitis, cholecystitis, gastric and duodenal ulcers), by Dr. Lardennois, agrégé professor of the Faculté de médecine of Paris; mesencephalitis and its sequels, by Prof. R. Cruchet, Bordeaux; affections caused by a filtrable virus, and their treatment by the serum of cured subjects, by Professor Vallée, director of the Ecole vétérinaire in Alfort; gastroenteritis in children, by Professor Mouriquand, of the Faculté de médecine of Lyons; the general hygiene of a large modern city, by Dr. Jules Renault, technical adviser associated with the ministry of health. An exhibit and excursions have been arranged for. Foreign physicians and veterinarians are admitted on the same basis as the French. The general secretary is Dr. Lepinay (rue de Marseille, Casablanca, Morocco).

Synthetic Thyroxin

Before the Société médicale des hôpitaux de Paris, a discussion developed recently with regard to synthetic thyroxin. It is the general opinion that synthetic thyroxin is an extremely active substance and that it produces exactly the same manifestations as the natural thyroxin. However, its toxic action appears to be greater, or, at least, it appears to be more difficult to use. Several members of the society reported cases of manifest intoxication accompanied by signs of hyperthyroidism and certain symptoms of exophthalmic goiter. The opinion of the society was that if the product is used at all great care should be exercised.

Thallium Acetate in the Treatment of Hypertrichosis

The depilatory properties of thallium acetate injected subcutaneously have long been known. Depilation is total but temporary, for which reason the procedure is employed today in Paris in the dermatologic services for children as a preparation for the treatment of ringworm. Louste, Juster and Dramez applied the ions of thallium salts to the regions of the lips and the chin presenting superfluous hairs, and used eighteen sittings from six to ten weeks apart. At the end of the treatment, the hairs could be pulled out readily, and up to the present time, after the lapse of six months, they have not reappeared. This method permits likewise easy depilation for treatment of rebellious sycosis.

ITALY

(From Our Regular Correspondent)

Dec. 15, 1927.

The Congress of Industrial Medicine

The recent Congress of Industrial Medicine, which was a sequel to that of Venice in 1924, was held successively in Parma, Modena and Carpi. The congress was opened at Parma with an address by Professor Gallenga, rector of the university of that city.

Professor Gabbi, chairman of the committee on organization, spoke on the subject "The Contribution of the Carta del lavoro (labor law) to the Prevention of Disease."

EMIGRATION IN RELATION TO TUBERCULOSIS

The official paper on the first main topic, "Emigration in Relation to Tuberculosis," was presented by Professor Allievi of Milan. He emphasized the importance of emigration for Italy, the population of which increases by 450,000, on an average, every year. During the period 1902 to 1923, 4,641,383 persons emigrated to transoceanic regions, the majority to North America. Before embarking the emigrants are subjected to an examination by a special commission, and those who are found physically fit are required to take a thorough cleansing bath and to have their clothing and baggage fumigated. Most of the emigrants are from the rural districts, and since they have not acquired a certain degree of specific immunity they are more susceptible to infection by the tubercle bacillus. This fact, together with the special circumstances surrounding emigration (overcrowding, fatigue, poor and insufficient food), explain why pulmonary tuberculosis develops so readily among emigrants.

THE PATHOLOGY OF ELECTRICITY AND ROENTGEN RAYS

On the second main topic, "The Pathology of Electricity and Roentgen Rays," Professor Aiello of Milan presented the official paper from the medical side. The speaker stated that, while all occupational diseases are decreasing, lesions resulting from electricity are constantly increasing. In studying the pathologic manifestations it is necessary to take special account of the constitutional factors pertaining to the subject affected; especially with regard to his status thymicolymphaticus. Various theories have been proposed in explanation of the causes of death by electricity. Jellinek supports the idea that it is almost always a question of apparent death. None of these theories have been as yet confirmed by experiment or by laboratory researches.

The lesions of roentgen rays, which today have become more rare, are influenced by many factors, among which is the individual predisposition of certain subjects. Radiologist's cancer affects about 30 per cent of those who suffer a radiodermatitis.

From the standpoint of physics, an official paper was presented by Pugno Vanoni, electrical engineer, of Milan, who explained certain technical facts pertaining to lesions from electricity and from roentgen rays, together with methods of protection.

A general discussion followed, in which Professor Allevi of Milan suggested that lesions from roentgen rays should be included in the list of occupational diseases entitling the sufferer to compensation.

OCCUPATIONAL INTOXICATIONS

The official paper on the third main topic, "Occupational Intoxications," was presented by Dr. Nebuloni of Milan, who discussed in detail the poisons that frequently give rise to occupational diseases. He pointed out that intoxications have resulted from the accidental dispersion of mercury in scientific laboratories, and the danger of dental amalgams was likewise affirmed. As for lead, he noted the importance of the respiratory tract as a portal for the poison, the rela-

tion between the concentration of hydrogen ions in the blood and the mobilization of the metal, and the variability in the localizations of the lead salts (especially phosphates) in the various parts of the body. As to benzine, it is not yet established whether it acts mainly as a poison of the nervous system or the blood.

THE SESSIONS AT MODENA AND CARPI

The congress held a session at Modena, at which many communications were presented; among others, a paper by Professor Donaggio on the pathology of lead poisoning; another by Dr. Filippini on the dermatoses of varnishers, and a third by Professor Castellino on the pathology of workers in artificial silk.

The closing session of the congress was held in Carpi, at which Professor Peri spoke on the transportation of loads by individual persons; Professor Devoto discussed factors of a hygienic and sanitary nature developing from lack of modern installations, and Dr. Marinoni outlined the conditions of labor among peasants engaged in rice culture.

TURKEY

(From Our Regular Correspondent)

Jan. 10, 1928.

The Second National Medical Congress of Turkey

The Second National Medical Congress of Turkey was held at Angora, Oct. 11-13, 1927, at the great national assembly. There were more than 400 members. The congress was opened by Ismet Pasha, the prime minister, who then gave the presidency to the minister of hygiene and social welfare, Prof. Dr. Refik Bey. At this congress many subjects of great importance to the country were discussed.

The question of trachoma was taken up on the first day and reports were read on: (*a*) the geographic distribution of trachoma in Turkey; (*b*) treatment of trachoma, and (*c*) outlines of a campaign of trachoma in Turkey. Discussions of these subjects followed in the afternoon.

The second day was devoted to the question of tuberculosis in Turkey. Reports were read on: (*a*) the biology of tuberculosis; (*b*) the epidemiology of tuberculosis; (*c*) distribution and mortality of tuberculosis in Turkey, and (*d*) modern treatment of tuberculosis. Discussions of these subjects followed in the afternoon.

The third day was given over to miscellaneous subjects in regard to public health and sanitation. A revision of the food and drug act was recommended as well as exclusion from import of "patent medicines" into Turkey. Then followed discussions of extraordinary hospital cases encountered during the last two years in the country.

In the afternoon the members visited the exposition relating to public health literature and propaganda and drugs manufactured in Turkey.

The next national medical congress is to take place at Angora in September, 1929, again under the presidency of Dr. Refik Bey. The subjects chosen for discussion are syphilis, cancer and scarlet fever in Turkey.

The First Census in Turkey

The first census in Turkey was taken, Oct. 28, 1927. The results show 6,584,404 men and 7,065,541 women, bringing the population of Turkey up to 13,649,945 inhabitants. The next census is to be taken in 1930.

The Central Government Institute of Hygiene

The construction of the Central Institute of Hygiene, the toxin-antitoxin laboratory, is nearing completion. The Rockefeller Foundation has donated a gift of $80,000 for laboratory equipment. This is the first building in a series of eight constituting the new medical center, including a school of hygiene, the cornerstone of which is to be laid this year.

Fiftieth Anniversary of the Turkish Red Crescent

On the occasion of the fiftieth anniversary of the Turkish Red Crescent a reception at which the members of the cabinet, the representatives of the great national assembly and the medical authorities were represented, was held, Dec. 23, 1927, at the Red Crescent headquarters in Angora. Dr. Refik Bey, the minister of hygiene, in his long presidential address reviewed the work of the society and spoke of the admirable work done in the face of extraordinary difficulties in past years. In closing the reception the prime minister, Ismet Pasha, expressed his thanks and admiration and wished the society further success.

POLAND

(From Our Regular Correspondent)

Dec. 14, 1927.

The p_H of the Blood in Eclampsia

According to researches of Henry Beck on blood dialysate of eclampsia patients, the p_H in the preeclamptic period does not differ from that of normal pregnancies. However, during the eclamptic attack, or immediately afterward, the acidity of the dialysate is markedly increased (mean $p_H = 7.28$). Shortly after the attack, the p_H of the blood dialysate returns to normal. This acidosis is due to the venous condition of the blood, caused by asphyxia (carbon dioxide) and increased muscular work, whence lactic acid enters the blood. In view of these facts, it must be accepted that the acidosis is the result and not the cause of the eclamptic attack.

Tuberculosis in a Psychopathic Hospital

Walerjan Terajewicz, in examinations of 724 patients by the Pirquet skin test and of observations in 473 necropsies, carried out in the Kobierzyn psychopathic hospital at Cracow from 1920 to 1926, found that 74.4 per cent of patients examined gave a positive Pirquet reaction. The positive reaction was noted most frequently in the schizophrenic, especially the catatonic, patients. The percentage of positive reactions was much higher in the sections that were overcrowded with patients than in the sections in which normal conditions prevailed. The necropsies revealed active tuberculosis most frequently in the schizophrenic, especially the catatonic, patients.

Antituberculosis Vaccination by the Calmette Method

Vaccinations against tuberculosis by the Calmette method were introduced in Poland in 1926 by the Calmette Vaccination Committee, and have been steadily carried on with the aid of the Polish Antituberculosis Society. Up to Oct. 1, 1927, there were vaccinated 128 new-born in Warsaw and forty-four in the provinces. Beginning with April, 1927, the vaccinated children were placed in the care of a pediatrician, who determines, every few months, the state of health of those vaccinated. Adults with tuberculosis, living in the environment of the vaccinated children, are examined by a physician of the antituberculosis consultation center. Of the vaccinated children, about 30 per cent have been reexamined thus far, and harmful effects of vaccination have not been discovered in any. As to the degree of protection afforded, the number of vaccinated is too small to permit the drawing of definite conclusions. The small number of vaccinations performed is due to the difficulty in getting the new preventive method introduced. It has not as yet attained in Poland a widespread popularity and confidence.

Special Course for Sanitary Engineers

Beginning Nov. 15, 1927, there was given in the state school of hygiene in Warsaw a second course of instruction for sanitary engineers. The course consisted of lectures

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grouped under three heads: general, scientific and technical. The first series established the general basis of the work of sanitary engineers, developed the problem of public hygiene, and dealt with the planning of cities, the construction of hygienic dwellings, the collection of statistics, epidemiology, and the crusade against tuberculosis. The second series of lectures took up bacteriology, hydrobiology and sanitary chemistry. The third series treated of hydrology, the draining of wet areas, the establishment of aqueducts, the planning and construction of sewerage systems, the disposal of rubbish, rural hygiene, ventilation, heating, disinfection, disinfestation, deratization, the hygiene of public buildings and utilities (schools, hospitals, bathing establishments, abattoirs), refrigeration plants, industrial hygiene, prevention of accidents, illumination, and abatement of the smoke evil. Candidates who had diplomas from national or foreign technical schools were admitted to the course. Applicants who could not present a diploma were permitted to hear the lectures but were not admitted to the final examination.

The Proposed Creation of Chairs of Balneology in Polish Universities

The association of Polish physicians of Warsaw has presented a petition to both the minister of public instruction and the minister of internal affairs requesting that chairs of balneology be created in Polish universities. It urges this in order that a sound basis for a Polish health industry, so called, may be established. The development of Polish health resorts is in keeping with the recognition of Poland as an independent nation.

BERLIN

(From Our Regular Correspondent)

Dec. 31, 1927.

Character Tests

Whereas Schopenhauer expressed the view that the character of a person is fixed and cannot be influenced in any manner, Rousseau was of the opposite opinion. The problem of character has been attacked hitherto by deductive and inductive methods. Professor Henning, head professor of psychology and philosophy in the Technische Hochschule in Danzig, recently approached the problem from the experimental point of view, and has reported before the Gesellschaft für Psychologie und Characterologie of Berlin the results of his researches. Heretofore, experimental psychology had been unable to test the character and the higher psychic behavior of a human being for the reason that the testing procedure was too precise and that the subject, when placed before the apparatus, became, as it were, an artificial person. Furthermore, the previous methods registered only the relation of the subject to the apparatus but not the relations of man to man. Therefore, Henning has worked out the so-called two subjects experiment, in which the subject is coupled with the director of the experiment, two or more persons are coupled together, or the subject is given a fictitious partner, so that the subject can be placed in certain definite situations. In his institute, which serves, at the same time, as the vocational guidance bureau for the Free City of Danzig, fifty functions, as well as the general character, of school children were tested before they were given positions in factories and business offices. This type of apparatus, of which Henning has constructed forty, registers the results as exactly as the plethysmograph records the blood pressure. For example, the apparatus will test motor guidance (but does not, however, test mental initiative). It is evident that, for a "leader," character is of especial importance; 50 per cent of the "leaders" in technical establishments have only a grammar school education, and have come up solely because of their strength of character. We do not know, however, in what years certain definite qualities of character develop. Every trait of character is tested on several types of apparatus. A very simple device for testing motor initiative consists of two paper-shears, which are fastened together. Each pair of shears is in the possession of a boy, who is supposed to try to cut some simple figures out of a sheet of paper. If the one has sufficient initiative, the other will not succeed in cutting out any figures. One must consider, in connection with this experiment, the sex factor, the age factor, the education factor, and the circumstance as to whether the two experimental subjects are acquainted with each other. By these and similar experiments that Henning mentioned it can be established just what persons, in point of character, are suitable to become "leaders"—whether or not a person is peaceably inclined, and whether, in a combined task, a given person is doing his share of the work. With apparatus of still different construction one can observe that a person of a rough disposition will not allow his companion to take part in the experiment, while the latter, during the second application of the apparatus, if he has a revengeful character, will hinder the former in the solution of the problem. The tests to determine whether a person is inclined to cheat or defraud were applied first to subjects who had actually been guilty of such conduct, and, secondarily, to persons distinguished for their probity of character.

For children who have been guilty of defrauding, and those who are suspected of such conduct, Heming attempts to help out the situation by securing apprentice positions (if possible, in the rural districts), with masters or housewives (if girls) who are good disciplinarians and will likely exert a favorable influence on the child, and preferably where they are the only apprentices employed. In this manner, he has been able to save many from being sent to institutions for moral training. Henning is not in a position to express as yet a definite opinion as to the success of his methods.

Cancer Research

Addressing the Deutsches Zentralkomitee zur Erforschung und Bekämpfung der Krebskrankheit, Dr. W. Cramer, member of the London Imperial Cancer Research Fund and also of the German Zentralkomitee, set forth that a tumor is malignant when it constitutes an anarchial focus in an organized "cell state"—a focus whose cells ignore the life needs of the other cells of the community. It thrives at the expense of the organism, for it collects tribute from the connective tissue cells in the form of blood and other body fluids. The body becomes gradually poisoned until it finally succumbs. As to what is the inner occasion for this struggle, we have as yet been unable to explain. Cramer is doubtful whether the discovery of the cause of malignant tumors will decide at once the question of treatment. Cramer calls a tumor transplantation a culture in vivo; that is to say, a cell community that has developed by cell division in a foreign spot, after much the same manner as bacterial cultures on gelatin plates. The term "culture in vivo" is a fitting expression, for, when cancer cells are transplanted to a previously sound animal, one will observe, if a cancerous tumor begins to develop, not metamorphosis of healthy cells into cancer cells but that the whole cancerous growth reproduces itself from within, at the new site. The transplanted cancer cells proliferate, displace and destroy the organic cells heretofore occupying the site, and impose tribute on the surrounding connective tissue. If the cancer cells are balked in their undertaking; that is to say, if the so-called stroma reaction is prevented, they will be forced to die of starvation; or, in other words, the attempted transplantation will fail owing to the destruction of the transplanted cells—a cure has taken place.

Marriages

GEORGE WINTHROP FISH, New York, to Miss Elizabeth Lambert Cushman of Bedford Hills, January 17.

WILLIAM EDGAR CHRISTIE, Philadelphia, to Mrs. Mary League Stauffer of Bryn Mawr, in January.

LOUIS V. WILLIAMS to Miss Zora Yeager, both of York, Pa., at Sacramento, Calif., Oct. 29, 1927.

VICTOR KARL FUNK, Oak Terrace, Minn., to Miss Myrtle Mangen of Maple Plain, in January.

ELMER ANTHONY SCHLUETER to Miss Angeline Rudolph, both of Cincinnati, Nov. 18, 1927.

LOUIS KELLAM PATTON, Amarillo, Texas, to Miss Blanche Stirling of Killeen, January 19.

LOREN F. ELLIOTT to Miss Hazel Hawkins, both of Albuquerque, N. M., Dec. 5, 1927.

JOHN T. CARPENTER to Miss Sarah Emlen Conard, both of Philadelphia, Dec. 22, 1927.

PAUL W. DU BOIS to Miss Muriel Harper Hunt, both of Detroit, Dec. 24, 1927.

Deaths

John Joseph Huddleston ✠ Memphis, Tenn.; Memphis Hospital Medical College, 1899; formerly professor of physics and chemistry at his alma mater, and professor of medicine and clinical medicine, University of Tennessee College of Medicine; vice president of the Memphis and Shelby County Medical Society; aged 55; died, January 17, at the Methodist Hospital, following an operation.

William Dorr Crosby ✠ Colonel, U. S. Army, retired, La Jolla, Calif.; Medical Department of Columbia College, New York, 1882; entered the army as an assistant surgeon in 1883 and passed through the various grades to the rank of colonel, being retired in 1921; served during the Spanish-American and World wars; aged 70; died, Dec. 25, 1927, of chronic myocarditis.

Sidney Scales Crockett ✠ Nashville, Tenn.; University of Nashville Medical Department, 1886; professor of neurology, 1895-1925, and since 1925, professor of clinical neurology and psychiatry, Vanderbilt University School of Medicine; member of the House of Delegates of the American Medical Association, 1908-1910; aged 64; died, January 7, of cerebral hemorrhage.

Gregory Ackermann, Wheeling, W. Va.; University of Berne, Switzerland, 1879; an affiliate fellow of the American Medical Association; past president of the Ohio County Medical Society; on the staff of the Wheeling Hospital; aged 75; died, January 16, of carcinoma of the prostate.

Isaac N. Ruddell, Jeffersonville, Ind.; University of Louisville (Ky.) School of Medicine, 1881; member of the Indiana State Medical Association; for several years secretary of the Clark County Medical Society; aged 70; died, January 12, at the Clark County Memorial Hospital, of arteriosclerosis.

Charles Milbank Cauldwell ✠ New York; Medical Department of Columbia College, New York, 1879; on the staffs of the Stony Wold Sanatorium, Lake Kushaqua, St. Francis' Hospital and St. Joseph's Hospital for Consumptives, New York; aged 72; died, January 17, of heart disease.

John Murray Steele ✠ Medical Inspector, Commander, U. S. Navy, retired, Owings Mills, Md.; University of Pennsylvania School of Medicine, Philadelphia, 1873; Spanish-American War veteran; aged 74; died, Dec. 19, 1927, of arteriosclerosis and cerebral hemorrhage.

Otto Henry Kohlhaas, Calumet, Mich.; Northwestern University Medical School, Chicago, 1903; member of the Michigan State Medical Society; aged 47; on the staff of the Calumet and Hecla Hospital, where he died, January 3, of intestinal obstruction and gallstones.

Thomas Caldwell Savage ✠ Demopolis, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1911; veteran of the Spanish-American and World wars; proprietor of a hospital bearing his name; aged 48; died, January 4, in a hospital at Selma, of acute nephritis.

Ninus S. Penick, Springfield, Ill.; Northwestern University Medical School, Chicago, 1891; member of the Illinois State Medical Society; formerly part owner of the Prince Sanitarium, where he died, January 11, of cirrhosis of the liver and pulmonary edema, aged 62.

Alton L. Smiley, Colorado Springs, Colo.; University of Buffalo School of Medicine, 1900; member of the American Psychiatric Association; formerly on the staff of the State Hospital, Pueblo; aged 49; died, January 2, of pulmonary tuberculosis.

Edward Bell Payne ✠ Fort Scott, Kan.; University Medical College of Kansas City, Mo., 1889; Bellevue Hospital Medical College, New York, 1890; on the staff of the Fort Scott Hospital; aged 61; died, January 4, of heart disease.

James Gilchrist Hendricks, Van Buren, Ark.; Medical Department of the Tulane University of Louisiana, New Orleans, 1874; Bellevue Hospital Medical College, New York, 1878; aged 74; died, Dec. 20, 1927, of chronic myocarditis.

Carl Osterheld, Yonkers, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1892; member of the Medical Society of the State of New York; aged 45; died, January 8, of a self-inflicted bullet wound.

Mamie J. Tanquary ✠ Independence, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1901; aged 57; died, Dec. 31, 1927, at a hospital in Chanute, of acute cholecystitis.

Jacob Charles Madara, Ridgely, Md.; College of Physicians and Surgeons, Baltimore, 1898; member of the Medical and Chirurgical Faculty of Maryland; aged 56; died, Nov. 5, 1927, of carcinoma of the lungs, intestine and bladder.

William Mitchell Ewing, Cave City, Ky.; University of Louisville School of Medicine, 1904; member of the Kentucky State Medical Association; served during the World War; aged 45; died, January 6, of tuberculosis.

Willard Porter Whittington ✠ Asheville, N. C.; College of Physicians and Surgeons, Baltimore, 1882; formerly member of the state legislature; aged 73; died, January 4, at the Mission Hospital, of carcinoma of the liver.

Finis E. Bell ✠ Mattoon, Ill.; Medical College of Ohio, Cincinnati, 1880; at one time mayor of Mattoon; formerly on the staff of the Memorial Methodist Hospital; aged 74; died, January 16, of chronic nephritis and uremia.

James Robert Jerome, Oakboro, N. C.; University of Maryland School of Medicine, Baltimore, 1890; past president of the Union County Medical Society; aged 66; died, Dec. 27, 1927, at a hospital in Monroe, of asthma.

Catherine Victoria Cochran Scott, San Francisco; New York Medical College and Hospital for Women, Homeopathic, New York, 1878; aged 78; died, January 14, of cerebral thrombosis and chronic nephritis.

Benjamin Jerome Sands ✠ Port Chester, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1893; health officer of Portchester from 1901-1916; aged 58; died, January 18, of pneumonia.

Fred S. Ruggles, Byron, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; formerly president of the school board; aged 70; died, January 4, of acute dilatation of the heart.

Algernon Duval Atkinson ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1894; formerly clinical professor of medicine at his alma mater; aged 56; died, January 18, of bronchitis.

George Wylie Pirtle ✠ Carlisle, Ind.; Rush Medical College, Chicago, 1890; aged 59; died, January 12, at the Mary Sherman Memorial Hospital, Sullivan, as the result of a cerebral hemorrhage.

Wynne Clark Garvin ✠ Millington, Mich; Detroit College of Medicine and Surgery, 1894; formerly secretary of the Tuscola County Medical Society; aged 60; died, Dec. 31, 1927, of heart disease.

Bert Clay Dunkelberg, Sumner, Iowa; State University of Iowa College of Medicine, Iowa City, 1889; member of the Iowa State Medical Society; aged 63; died, Nov. 7, 1927, of heart disease.

Noah Daniel Berry, Muncie, Ind. (licensed, Indiana, 1900); member of the Indiana State Medical Association; for six years city health officer; aged 73; died, January 5, of cerebral hemorrhage.

S. J. Woodcock, Asheville, N. C.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1893; aged 56; died, Dec. 31, 1927, of diabetic gangrene.

✠ Indicates "Fellow" of the American Medical Association.

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Joseph S. Horsley, Jr., West Point, Ga.; Medical Department of the Tulane University of Louisiana, New Orleans, 1894; aged 54; died, Dec. 20, 1927, of carcinoma of the bladder.

Harold Joseph Byron ✠ Connellsville, Pa.; Jefferson Medical College of Philadelphia, 1920; aged 30; died, January 6, at the Johns Hopkins Hospital, Baltimore, of heart disease.

Henry N. Hardister, Dallas, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; aged 71; died, January 4, of chronic interstitial nephritis and arteriosclerosis.

Samuel James Taylor, Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1896; aged 61; died, Dec. 20, 1927, at the City Hospital, of arthritis deformans.

Alan D. Fraser, Idaho Springs, Colo.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1896; aged 58; died suddenly, Dec. 15, 1927, of intestinal obstruction.

Robert George Moffat, Vancouver, B. C., Canada; Western Reserve University School of Medicine, Cleveland, 1911; for many years a ship surgeon; aged 56; died recently.

John D. Watkins ✠ Micanopy, Fla.; Atlanta Medical College, 1888; formerly member of the state legislature, and mayor of Micanopy; aged 63; died, Dec. 12, 1927.

Charles A. Stearns, Pawtucket, R. I.; Harvard University Medical School, Boston, 1884; aged 69; died, Dec. 29, 1927, at the Jane Brown Memorial Hospital, Providence.

Corydon Bee Root, San Francisco; University of California Medical School, San Francisco, 1891; aged 54; died, January 8, of chronic nephritis and heart disease.

Wallace C. McCanon, Alva, Fla.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 91; died, January 5, of cerebral hemorrhage and mitral regurgitation.

Henry A. Parrott, Blountville, Tenn.; Nashville Medical College, 1878; Confederate veteran; for thirty-eight years county physician; aged 89; died, Dec. 24, 1927.

Calvin Thayer Adams, New York; Medical Department of Columbia College, New York, 1884; aged 65; died, January 14, at Miami Beach, Fla., of heart disease.

Thomas Vanderslice Miller, Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1868; aged 84; died, January 6, as the result of a fall.

James B. Dickey, Iroquois, S. D.; Homeopathic Medical College of Missouri, St. Louis, 1883; aged 71; died, Dec. 31, 1927, of pulmonary edema.

John L. McComb, Lamar, Mo.; St. Louis College of Physicians and Surgeons, 1882; aged 78; died, January 1, of cerebral hemorrhage.

Simmons S. Scovill, Kenora, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1877; aged 71; died, in December, 1927.

William Fletcher Rosborough, Micanopy, Fla.; University of Georgia Medical Department, Augusta, 1899; aged 55; died, Dec. 21, 1927.

Frank Woodruff Chapin, New York; Bellevue Hospital Medical College, New York, 1879; aged 73; died, recently, in Rapallo, Italy.

Simon Occhipinti, New York; University of Palermo, Italy, 1890; aged 63; died, January 11, at his home in Brooklyn, of heart disease.

William J. Walden, Tompkinsville, Ky.; University of Louisville School of Medicine, 1882; aged 73; died, January 8, of pneumonia.

William Arthur Miller, Liberty, Mo.; University Medical College of Kansas City, 1900; aged 51; was found dead, Dec. 25, 1927.

Orlando Post Dearth, Akron, Ohio; Jefferson Medical College of Philadelphia, 1882; aged 71; died, January 8, of myocarditis.

J. A. George, Savannah, Ga. (nongraduate); formerly a druggist; aged 60; died, Dec. 16, 1927, at the Savannah Hospital.

Levi Spitler, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1876; aged 84; died, January 13, of dilatation of the heart.

Calvin W. Burket, Warsaw, Ind.; Medical College of Ohio, Cincinnati, 1866; Civil War veteran; aged 89; died, Dec. 28, 1927.

Joseph Ransom Rucker, Kingsport, Tenn.; Meharry Medical College, Nashville, 1923; aged 31; died, Nov. 26, 1927.

George W. Chinn, Frankfort, Ky.; Medical College of Ohio, Cincinnati, 1864; aged 86; died, January 6.

Bureau of Investigation

ABRAMSISM ABROAD

The Quack, Like the Prophet, Is not Without Honor Save in His Own Country

The popularity of any particular medical cult or brand of quackery depends not so much upon the average intelligence of the public, as upon the average knowledge the public has in the field covered by the cultist or the quack. Credulity in things medical, as has been said before, is due more to lack of knowledge than to lack of brains. The fantastic hokum of Albert Abrams is practically a dead issue in the United States. It has been relegated in this country to obvious fakers, some osteopaths, and the occasional physician who suffers from an itching palm or a lack of scientific balance. The educational campaign carried on by THE JOURNAL and by the *Scientific American* has put the general public of the United States in possession of sufficient facts, so that mention of the "Electronic Reactions of Abrams" usually provokes either a smile or a shrug.

The result has been that, like its prototype, Perkins' tractors, the Abrams brand of quackery has gone to other countries. Just as tractorism, after its vogue in the United States had waned to the point where it was no longer profitable, flourished for some years in the British Isles and Denmark, so Abrams' fantastic hokum is now deluding the credulous in England, Canada and France.

In Canada, while the "E. R. A." is making some noise, it naturally has no support from the more responsible element of the medical profession. In France, the Abrams nonsense seems to be mainly boosted by one Régnault, who attended the electronic "convention" that was held in Chicago last summer, and was quoted in the foreign language press of the United States as declaring that the opposition of American physicians to the E. R. A. was due to their "intellectual laziness."

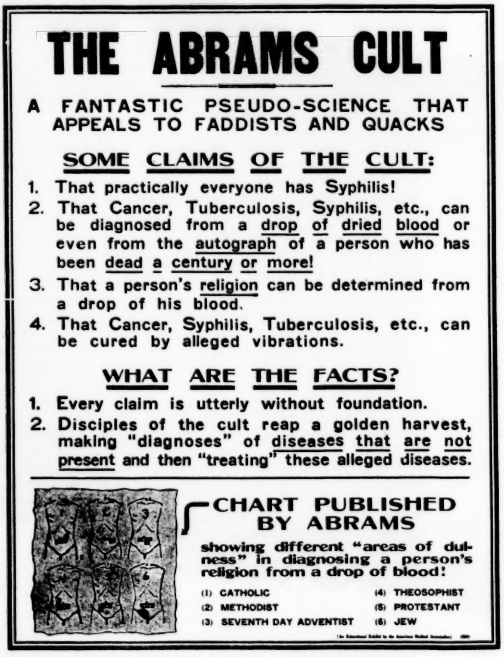
It is in England, however, that the E. R. A. has taken on its most amusing, or, should we say, its most tragic aspect. The chief exponent of the Abrams cult in the British Isles is Sir James Barr, who was once president of the British Medical Association, and, presumably, on that account, is listened to with the tolerance that is due to previous attainments—and old age. Sir James seems to have swallowed Abrams' theories hook, line and sinker. In his published works he declares that he has diagnosed various human ailments by means of Abrams' magic box. He uses, to achieve these marvels, either a drop of the patient's blood or a specimen of the patient's handwriting. He describes one case, in which, from a man's handwriting, and without seeing or knowing anything of the person who wrote, he was able to tell by the Abrams hocus-pocus that his correspondent was, on his father's side, an English Jew, with probably a trace of German, while on his mother's side, he was Irish and Spanish. He determined from the handwriting, also, that the man was suffering from arteriosclerosis, but, for some unknown reason, was not suffering from the classic Abrams triad—syphilis, cancer and tuberculosis. In only one feature has Sir James Barr failed to come up to the great Abrams himself—he has not yet, it appears, been able to diagnose a man's religion from either an autograph or a drop of blood. He will doubtless achieve this degree of E. R. A. finesse if he lives long enough.

The *British Medical Journal* for October 1, 1927, contained a short article on "The Historical Aspect of Quackery" by A. J. Clark, M.D., F.R.C.P., who is Professor of Pharmacology at the University of Edinburgh and the successor to the late Professor Cushny. In Dr. Clark's short article, he incidentally referred to the Abrams method. All that Dr. Clark had to say on this matter was:

"The followers of Abrams believe that all diseases can be both diagnosed and treated by means of two boxes containing some simple electrical apparatus."

This incidental, two-and-one-half-line reference to the E. R. A. brought forth a deluge of correspondence from Sir James Barr that, before it was stemmed, inundated the *British Medical Journal* to the extent of two and one-half pages. So far as one can get from reading Sir James' diatribes, he objected to Professor Clark's classifying the followers of Abrams with quacks, on the ground that some of the followers of Abrams are legally licensed to practice medicine. Yet, with curious perversity, Sir James himself admitted that in his own country, at least, it would seem that "there are more qualified [licensed] than unqualified [unlicensed] quacks."

In order to bolster up his contention that not all followers of the Abrams method were quacks, Sir James Barr asks whether T. Proctor Hall of Vancouver, British Columbia,


THE ABRAMS CULT
A FANTASTIC PSEUDO-SCIENCE THAT APPEALS TO FADDISTS AND QUACKS
SOME CLAIMS OF THE CULT:
1. That practically everyone has Syphilis!
2. That Cancer, Tuberculosis, Syphilis, etc., can be diagnosed from a drop of dried blood or even from the autograph of a person who has been dead a century or more!
3. That a person's religion can be determined from a drop of his blood.
4. That Cancer, Syphilis, Tuberculosis, etc., can be cured by alleged vibrations.
WHAT ARE THE FACTS?
1. Every claim is utterly without foundation.
2. Disciples of the cult reap a golden harvest, making "diagnoses" of diseases that are not present and then "treating" these alleged diseases.
CHART PUBLISHED BY ABRAMS
showing different "areas of dullness" in diagnosing a person's religion from a drop of blood!
(1) CATHOLIC
(2) METHODIST
(3) SEVENTH DAY ADVENTIST
(4) THEOSOPHIST
(5) PROTESTANT
(6) JEW

Miniature of one of the Bureau of Investigation's posters.

M. C. Hardin of Atlanta, Georgia, and Francis Cave of Boston, Massachusetts, are quacks. Just what the status of these three individuals is in the annals of American medicine may be judged from the following data:

T. PROCTOR HALL.—According to our records, this man received his diploma in medicine, when he was 44 years old, from L. D. Rogers' egregious "National Medical University," a low-grade, sundown affair. It went out of existence some years ago, and for years before this happy event occurred, it was not recognized by practically any state in the Union. A few years ago, the name of T. Proctor Hall headed the "Board of Administration" and appeared as "Professor of Electro-Therapeutics" of the "American Post-Graduate School," a concern that granted a long list of sonorous degrees, with imposing diplomas, all on the mail-order plan. Prior to this, the name of T. Proctor Hall appeared on the "Faculty" of "Ruskin University," that was run by the notorious quack, Orlando Edgar Miller, whose medical record, both in the United States and England, smelled to heaven. The name of T. Proctor Hall also appeared as a member of the so-called International Hahnemannian Commission, a hand-picked affair composed mainly of Abrams disciples and, apparently, created for the purpose of bringing in a report favorable to the E. R. A. It has been officially repudiated by the American Institute of Homeopathy, the reputable organization of the followers of Hahnemann.

M. C. HARDIN.—According to our records, this man received a diploma in 1913 from the Georgia College of Eclectic Medicine and Surgery, which went out of existence in 1916. The name of M. C. Hardin appeared as a member of the "National League for Medical Freedom." This organization, engineered and inspired by nostrum exploiters, aided and abetted by the followers of various cults, devoted its energies to blackguarding scientific medicine in general and the American Medical Association in particular. Hardin's name also appeared as a member of the "Professional Insurance Corporation," a concern organized, apparently, to protect Abrams disciples from malpractice suits. His name appeared, too, as editor of the "Journal of the American Electronic Research Association."

FRANCIS A. CAVE.—This person, so far as our records show, is not a physician but an osteopath. Cave has long been one of the most active of Abrams disciples, and, according to Abrams himself, leased no fewer than fifteen "oscilloclasts." Cave's name appeared as one of the honorary vice presidents of the "Medical Liberty League," a Massachusetts organization that is, or was, devoted to antivivisection activities and otherwise opposing scientific medicine. Cave seems to have received his "diploma" from the Massachusetts Osteopathic School in 1903, although the Massachusetts authorities state that the institution had no legal right at that time to grant such a degree.

So much for the three American champions that Sir James Barr submits to prove the respectability of the E. R. A. He also mentions the names of Régnault of France and Verploegh of Holland. We have no dossier on these men but, doubtless, the medical profession of those two countries has Régnault and Verploegh correctly appraised.

The present status of the E. R. A. in the British Isles is of interest to the student of pseudomedicine. The followers of Abrams in England seem to be, generally speaking, of a more respectable type than the Abrams disciples in America. It is for this reason, probably, that Abramsism is not yet as completely discredited across the Atlantic as it is here. In the nature of the case, it became necessary for the English followers of E. R. A. so to revise Abrams' own doctrines as to make them less uncompromising; to retain the advertising value of Abrams' name but to avoid the untoward consequences of E. R. A. practice.

The present position of the electronic cult in the British Isles is set forth in a book published in London entitled, "Abrams' Methods of Diagnosis and Treatment"; it is edited by Sir James Barr, who also writes the foreword. While Sir James himself still holds to the Abrams thesis, that it is possible to diagnose from a drop of blood or a specimen of handwriting the approximate weight, sex, race and religion of the person who donated the blood or the handwriting, yet the other English followers of Abrams, and those responsible for the book which Sir James Barr edits, specifically discard the very thesis on which Abrams based his theory of the electronic nature of disease. Abrams' claim that it is possible to diagnose disease from a specimen of blood, or from handwriting, they declare, was "premature and foolish."

The English electronists, however, have not discarded anything in the Abrams bag of tricks that possesses a cash value. While they take the position that their diagnoses are too subtle and esoteric to be checked by pathology, yet they hold that an Abrams diagnosis permits them to determine how the case should be treated with an oscilloclast! Evidently, when an English Abramsite makes a diagnosis of syphilis, he does not mean that the spirochete can be found, but that the patient will be benefited if he takes an oscilloclast treatment! As a means of retaining the money-making potentialities of Abrams' brand of quackery, and, at the same time, avoiding the dangers of a legal comeback, the scheme should be both profitable and safe.

In this same book, the English followers of Abrams hold that "no Abrams practitioner is ever to be understood as offering any definite prospect of good results in malignant cases." At the same time several case reports are given, in which persons alleged to have been suffering from cancers of the rectum, breast, tongue, stomach, etc., have either recovered entirely or have received most remarkable help when given oscilloclast treatment. The book is a master-

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piece in its way. Cautions and disavowals—which the sick public may be counted on to overlook—are to be found in the book where they can be quoted, should the legal position of the Abrams practitioner be questioned. At the same time the book includes a wonderfully attractive set of "case reports" that should insure the continued exploitation of the public. It is easier to admire the uncompromising foolishness of Abrams and Sir James Barr, than the vacillating venality of the rank and file of E. R. A. practitioners in England, who, while rejecting and disavowing every claim of Abrams that is capable of proof or disproof, still use the name of Abrams to exploit the public and to line their pockets.

Correspondence

NATIONALIZATION OF MEDICAL SCIENCE

To the Editor:—May I draw attention to a tendency of book critics—a tendency which finds occasional expression even in the columns of THE JOURNAL—to nationalize medical science. It is well illustrated in a review (THE JOURNAL, January 7, p. 54) of a book that is written by an American surgeon with one chapter by an English surgeon. The critic says, "Few surgeons will agree" with the unorthodoxies of the former or that they "are not likely to be endorsed by other observers." But the heresies of the latter "will hardly be accepted by *American* scientists" (italics mine). This distinction might, of course, be due to false modesty on the part of the critic; but I fear, from having noticed it rather frequently, that it is the result of a sort of convention. You will agree, I am sure, that such a convention is deplorable. Whatever excuse there may have been in the past to associate particular theories with particular nations can scarcely be advanced today. The denationalizing of science is clearly as much in the interest of truth as in that of good will.

ROSSLYN EARP, M.R.C.S., DR.PH., Boulder, Colo.

EXCISION OF BARTHOLIN GLAND CYSTS

To the Editor:—In THE JOURNAL, Dec. 31, 1927, Dr. G. H. Taubles of San Francisco describes a technic for excision of Bartholin gland cysts by the injection of melted paraffin to facilitate the dissection. This method has been employed by me for several years.

This procedure is not at all new, being originated first by Pozzi and quoted by Crossen in the fourth edition of "Diseases of Women."

A. J. GORDON, M.D., Newark, N. J.
Associate Attending Gynecologist,
Newark City Hospital.

CAMPHOR AND STRYCHNINE AS CARDIAC STIMULANTS

To the Editor:—After reading the editorial in THE JOURNAL, January 7, condemning the use of camphor and strychnine as cardiac stimulants, I, as a "proponent" of camphor as a circulatory stimulant, must, in justice to the drug, reply.

It has, of course, been positively proved that camphor does not increase the cardiac output; but as the heart is only one part of the circulation, it would seem only fair to the drug to consider its effect on the blood vessels. It is a matter of clinical fact, which I have very many times observed, that in cardiac failure and collapsed conditions, with cold skin, feeble pulse and failing heart, subcutaneous injection of camphor in sterile oil has caused the surface of the skin to become flushed, dilated the peripheral blood vessels, and improved the whole circulation. Camphor by the mouth will cause a moderate amount of the same type of circulatory improvement.

While strychnine was long misused with the idea that it was a cardiac stimulant in serious conditions, as pneumonia and typhoid, it still should not be utterly condemned, as clinicians know that it will stimulate a flagging heart to greater activity, and certainly is a very positive stimulant to the nervous centers. This drug has been much overused, and too large doses have been given; but it has its valuable activity in many conditions of circulatory disturbance. It is not as valuable a circulatory stimulant as is caffeine.

It has long been proved that alcohol is not a cardiac stimulant and should not be used in collapse. On the other hand, it is of universal knowledge that sudden attacks of syncope from almost any cause may be averted by the ingestion of a small amount of a strong alcoholic preparation. It would be ridiculous to dispute this well known fact.

It is almost a universal belief among clinicians that digitalis is not the best drug to use in acute collapse, although it ultimately will of course increase the output of the heart.

OLIVER T. OSBORNE, M.D., New Haven, Conn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HARRY LYNCH O'CONNOR

To the Editor:—Will you kindly give me information regarding "Dr." Harry L. O'Connor, formerly of the Washington Park Hospital, Chicago, and now superintendent of the Belmont Hospital, Chicago?

M.D., Chicago.

To the Editor:—Will you kindly give me what information you have on a man who calls himself "Dr." Harry L. O'Connor, formerly with the Washington Park Hospital as manager and pathologist? What school is he a graduate of? Is he licensed in Illinois?

M.D., Chicago.

ANSWER.—According to the records of the American Medical Association, Harry Lynch O'Connor is not a graduate of any reputable medical school, nor is he licensed to practice medicine in any state in the Union. In the catalogues of the Bennett Medical College from 1909 until 1914, the name of Harry Lynch O'Connor appeared variously as "Director of Laboratories and Demonstrator in Bacteriology and Pathology," "Professor of Pathology and Director of Laboratories," and "Professor of Surgical Pathology." Following his name were the degrees "B.S." and "M.D." As the records of the American Medical Association failed to show that any one by the name of Harry Lynch O'Connor was entitled to put M.D. after his name, a letter was written in 1915 to the registrar of Bennett Medical College, asking that institution to send information on this point. The secretary of Bennett Medical College wrote:

"Replying to your inquiry regarding Dr. Harry Lynch O'Connor, we are also unable to find any records as to the source of his various degrees and we are inclined to believe that the M.D., at least, was conferred by himself. He was dropped from the faculty by Dr. Herzog very shortly after Dr. Herzog became Dean. I regret that I am unable to give you any more information in the matter."

Some years ago, there was incorporated in the state of Illinois a concern known as the "American College of Pathology and Bacteriology" of Chicago. Harry L. O'Connor was named as one of the incorporators, and, from the "Announcement" put out by this concern, O'Connor was also "Professor of Bacteriology"—with, of course, B.S., M.D., following his name. The American College of Pathology and Bacteriology purported to give mail-order courses in the highly technical subjects of bacteriology and pathology. It, of course, issued an ornate diploma—for, what is a mail-order school for, if not to issue diplomas? As part of the come-on material, the American College of Pathology and Bacteriology published a photographic reproduction of its diploma, which was said to be "handsomely engraved on sheepskin." The diplomas bore the signature of Harry L. O'Connor as "Secretary," and also of "Harry L. O'Connor, B.S., M.D.," as "Professor of Bacteriology," a member of the "Faculty."

Later, the name O'Connor is found as one of the "faculty" of the "Chicago School of Refraction," a mail-order concern which gave courses in spectacle-fitting. O'Connor was "Professor of Hygiene and Prophylaxis" in this institution.

The "Chicago Hospital College of Medicine," a low-grade school chartered in 1912 and later advertised under the name "Fort Dearborn Hospital Medical School," in its announcements for 1916-1917, carried the name of H. L. O'Connor as "Professor of Laboratory Pathology." This college, now known as the Chicago Medical School, is reported as not being recognized by the licensing boards of forty-seven out of the forty-eight states in the Union.

ROENTGEN-RAY TREATMENT OF CALLOSITIES

To the Editor:—I understand that roentgen-ray treatment is one of the most effective ways of curing callosities and corns on the feet. Please give complete technic, with kilovolt peak, distance, milliamperage, filtration and time. Please omit name. M.D., San Diego.

ANSWER.—Callosities and corns can be cured with intensive or hyperintensive doses of the roentgen ray. The technic is the same as that used for verruca plantaris. Because of the thickened horny layer, doses of from 1½ to 2½ skin units may be administered at intervals of from four to six weeks. If the lesion has not disappeared after two or three such treatments, the roentgen ray should be abandoned and other methods used. Each lesion must be treated separately and closely shielded with lead. Using a kilovolt peak of 100 (approximately 6 inch gap), distance 8 inches, 2 milliamperes, no filter, three minutes equals one skin unit. Further details on technic are in McKee's book "X-Rays and Radium in the Treatment of Diseases of the Skin."

ETIOLOGY OF MONSTROUS BIRTHS

To the Editor:—A patient of mine infected his wife with gonorrhea about the time she became pregnant. Last March, she gave birth to a hydrocephalic monster with spina bifida. The child lived only an hour. Now the wife is pregnant again, and expects to have a child about May. Is there much chance that she will give birth to another monster? Is there anything in the way of prophylaxis against a monster in a case of this kind? M.D., Los Angeles.

ANSWER.—According to Mall, faulty environment is responsible for the production of monsters; and, while Stockard agrees with this statement, he reduces the primary cause of all abnormal developments to a single factor—developmental inhibition or arrest. The type of deformity that results depends solely on the exact moment when the interruption occurs. Stockard's experiments were confined mostly to fishes, but according to Arey these concepts should apply equally well to human abnormalities, provided the ovum is subject to delay before implantation and to arrest afterward. The anlage for monstrous development in nearly all cases is laid down in the first few weeks of embryonic life; hence, nothing which is done in the later months can prevent true monsters. Diseases such as syphilis and gonorrhea should be treated intensively before pregnancy, and syphilis also all through pregnancy. In the case cited, gonorrhea may have been responsible for producing a faulty environment in the uterus or an abnormally fertilized ovum, but there is no way of proving either possibility. It must be admitted that there is no known way of preventing the majority of monsters in man. Recurrence of monsters is not rare; therefore everything possible should be done to clear up abnormalities in and about the uterus if there are any. Since a large proportion of monsters have bony defects involving especially the skull and spinal column (hydrocephalus, anencephalus, spina bifida) it may be advisable to take a roentgenogram in the later months of pregnancy. The knowledge of the presence of a monster may be important in the selection of the type of delivery.

TREATMENT OF MALARIA

To the Editor:—Kindly publish the most recently approved treatment of estivo-autumnal malarial fever. I have treated this case intravenously and orally without effect. Please omit name. M.D. Illinois.

ANSWER.—If quinine fails, methylthionine chloride (methylene blue) is probably the best succedaneum, in doses of from 0.1 to 0.2 Gm. every three hours; but it is much inferior to quinine. Couto (*Arch. f. Schiffs- u. Tropen-Hyg.*, July 1, 1926) advises that methylthionine chloride be combined with quinine, an intravenous injection of 0.05 Gm. of methylthionine chloride in 5 Gm. of water being given from two to five times daily. Capsules containing from 0.1 to 0.2 Gm. to a total of 1.5 Gm. daily may be taken during meals by patients with milder forms of malaria.

SKIN ERUPTION AFTER TETANUS ANTITOXIN

To the Editor:—Three months ago a girl, aged 9 years, was given 1,500 units of antitetanic serum in the back, following a knife cut on the finger. About four days later she developed a severe angina with fever and a typical scarlet fever rash. No previous injection of horse serum had been given, and, in spite of the possibility of anaphylaxis, 500,000 skin test doses of scarlet fever antitoxin was given in the muscles below the scapula. There was progressive improvement of the general symptoms in the next few days. Twenty-four hours after the scarlet fever antitoxin there was some cutaneous edema and discoloration about the site of injection. Following this, the condition spread all over the back. When fully developed there were areas where the skin appeared to be brawny and white like a welt or wheal. Other places appeared to be the seat of subcutaneous hemorrhage, so that the whole back was mottled. There were no skin disturbances elsewhere on the body. Subsequently there was fluid under quite an area of skin. This was seropurulent material, which turned out to be sterile. The incisions closed for a time, but more fluid formed and was released. It is still draining. Please give your opinion as to the cause of this condition and suggest treatment. Please omit name. M.D., California.

ANSWER.—The local disturbance with wheals and fluid accumulation was undoubtedly of anaphylactic nature in spite of no history of previous serum. Such phenomena were first described in animals by Arthus and are known as the Arthus phenomenon. The treatment of the draining wound is, of course, surgical, although such local exudates usually subside without drainage.

ERYSIPELAS MIGRANS

To the Editor:—A girl, aged 4 years, developed fever ranging from 102 to 104 F., of remitting type, with afternoon and evening peaks, and complained of pain, swelling and heat about the internal malleolus and the inner surface of the right ankle. Examination showed a small area of erythema over the anterior border of the medial malleolus, which was hot to the touch and painful to the patient. There was evidence also of a healed and healing impetigo contagiosa eruption in the same leg, but not intimately connected with the location of the eruption. Hot fomentations were applied, as well as 5 per cent ointment of sulphonated bitumen. The next day the eruption was less in the ankle region but appeared to have spread slightly on the anterior surface of the leg. Two days later the eruption had departed from the region of the ankle but had advanced to the region of the knee and was apparently more severe in type, the local swelling and the edema were more marked, heat was increased, and fever was almost constantly between 103 and 104 with few or no remissions. Only the anterior surface of the limb was involved, an area about 4 inches wide by 5 long. Cold packs were now advised for the eruption and the fever subsided somewhat. Sulphonated bitumen ointment was continued as before. Next day the fever was lower, but the eruption continued to advance upward over the front of the thigh. When the eruption had reached the middle of the thigh, shortly thereafter, a 10 per cent sulphonated bitumen with 3 per cent guaiacol ointment was prescribed and applied freely along a line about an inch ahead of the advancing margin of the eruption. In two days the child's fever had reached the normal level and the eruption had almost completely subsided. She has not had trouble since. The eruption was erythematous in type, with no vesicles, papules, scaling, and no breaking of the skin surface anywhere except for a small group of blisters below the knee where fomentations had been applied too hot. The underlying edema at times was rather marked as the disease progressed. The margins of the eruption at all times were fairly well marked. Please give the most likely diagnosis.

J. J. MCGRATH, M.D., Jasper, Texas.

ANSWER.—There is no reason to doubt that the case was one of mild erysipelas migrans. The patches of acute erythema with infiltration, heat and tenderness, combined with the general symptoms and the migrating character, could hardly be explained in any other way.

ZÜND-BURGUET APPARATUS FOR DEAFNESS

To the Editor:—Is any one in this country using the electrophonoid apparatus of Zünd-Burguet (auditory reeducation), or has any one in this country had any experience in using the electrophonoid method of treating chronic deafness? A. E. SCHLANSER, Washington, D. C.
Major, M. C., U. S. Army.

ANSWER.—So far as is apparent, no one in this country is using the Zünd-Burguet electrophonoid; at least, articles on the subject have not been published. George C. Cathcart of London recently published a small book on the treatment of chronic disease by the electrophonoid wave method of Zünd-Burguet. A critical study of reports submitted by Dr. Cathcart of cases which had been treated with this apparatus shows that his conclusion cannot be taken as established. Many claims have been made for various kinds of apparatus for the reeducation of the deaf but it is still doubtful whether any have great value. For the benefit of others who may read this answer, the following reference is given:

Zünd-Burguet Electrophonoide Method for Deafness, Queries and Minor Notes, THE JOURNAL, July 25, 1925, p. 290.

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DISTURBANCE OF THE BREAST

To the Editor:—A woman, aged 31, married ten years, who had one pregnancy five years ago ending in spontaneous abortion at two months, and whose periods are regular and normal as to amount, complains of constant soreness of her breasts, worse at times than usual, but constantly so sore that the pressure of even loose clothing is unbearable. The breasts are swollen and hard and this soreness is little affected during the periods. The uterus is normal in size and position and there are no pathologic changes in the pelvis or breasts. She has been given various glandular medication and six months ago had a dilation and curettage, all without benefit. I would greatly appreciate any suggestion that will be of benefit. Please omit name.

M.D., Kansas.

ANSWER.—Breast disturbances such as those described most often arise as a result of abnormal ovarian function. Comparable with the persistence of infectious arthritis after removal of diseased teeth or tonsils, the breast lesions secondary to ovarian abnormality may continue after disappearance of the original focus of trouble. Granted that there is not a persistent corpus luteum cyst of the ovary, the available evidence indicates that the genitalia are now free from pathologic conditions and are functionally normal. The basal metabolic rate should be determined and routine physical examination made to rule out other endocrine disturbances.

Care of the breasts is chiefly symptomatic. They should be covered with soft material, such as silk, and should be supported but not subjected to pressure. Light massage and gentle kneading with soothing ointments are helpful. Sunbaths heal some of these cases. Other light therapy and roentgen-ray treatments must be employed with caution.

DERMATITIS FROM HYDROFLUORIC ACID

To the Editor:—Nov. 13, 1927, a well developed and, before this, a healthy young man called at my office. His whole body, except his face, was covered with a severe dermatitis and a secondary staphylococcic infection. He stated that, on November 7 and 8, with very thin clothing on, but with leather gloves, he poured out each day 10 gallons of 30 per cent solution of hydrofluoric acid in 24 gallons of water and used this for cleaning castings. Could it be possible that hydrofluoric acid caused this eruption? Please omit name.

M.D., New York.

ANSWER.—Yes, it is entirely possible. The spread of the eruption beyond the parts coming in contact with the irritant is commonly seen in such cases.

PERSISTENT MEMBRANE AFTER DIPHTHERIA

To the Editor:—I have a case of recurring diphtheritic membrane, located in the epipharynx, of nine months' standing. Diagnosis was confirmed by cultures on four different occasions. About eight injections of 3,000 units of diphtheria antitoxin and the roentgen ray had no beneficial effect. Kindly reply on treatment. Please omit name.

M.D., St. Louis.

ANSWER.—Unless the cultures from such a case were shown to be virulent, it might be suspected that nonvirulent diphtheria bacilli were secured in cultures. If the patient has carried virulent diphtheria bacilli for so long a time, he would probably be immune and antitoxin would be useless. It seems likely that some other cause is operating, possibly some fungus. The treatment would depend on an accurate diagnosis.

TUMOR OF CONJUNCTIVA

To the Editor:—Kindly state name, treatment and literature concerning the following condition: A boy, aged 4 weeks, has in his left eye at the external side a yellowish white membrane. It is about 0.25 cm. in width and 1 cm. in length. It covers the sclera and is seen only when the lids are apart. Kindly omit name.

M.D., Brooklyn.

ANSWER.—This condition is undoubtedly a dermoid tumor of the conjunctiva, which has a tendency to increase in size. Because of the irritation that is produced from growing hair and dryness of the surface, the best treatment is complete removal and closing of the area with normal conjuctiva. This condition is described in the eighth edition of Doane's translation of Fuchs' "Ophthalmology," page 508.

BRONCHIAL ASTHMA AND ARSPHENAMINE

To the Editor:—A woman, aged 43, has had asthma of the bronchial type practically since birth. I have been her physician for eight years. Her various physicians have given her all the known remedies with little or slight results. In the past eight years I have given epinephrine, ephedrine, sodium iodide and guaiacol, morphine and chloroform, with nothing gained except temporary relief. Not since I have known her has she been absolutely free from all symptoms for more than three days. Oct. 28, 1926, I gave her 0.4 Gm. of neoarsphenamine intravenously and Nov. 11, 1926, 0.6 Gm. Since the first administration, the patient has been free from asthma. This is my first case of asthma to treat with arsphenamine, and I should like to know whether you could give more information as to results obtained by other physicians in cases treated likewise. There is no history of syphilis.

SAMUEL J. ROSE, M.D., Lexington, Ky.

ANSWER.—Arsenic used in many forms by mouth or injection may give some relief to a small percentage of the bronchitic type of asthmatic patient. This beneficial effect is due to the tonic action of arsenic on such glandular tissues as lymphatic, digestive, thyroid and suprarenal, or to its specific action on bacteria of the spirochete type, which are sometimes found in the bronchial secretions of patients with asthma. Syphilis as an etiologic factor should always be considered.

THYROXIN IN ICHTHYOSIS

To the Editor:—1. I have under my observation a patient with ichthyosis. She has been advised by a St. Louis dermatologist to take 0.2 mg. of thyroxin twice a day. Do you consider this a rather heavy dosage? 2. Are the symptoms of overdosage with thyroxin similar to those of hyperthyroidism? 3. What period of time would you consider it safe to take such a dosage? Please omit name.

M.D., Iowa.

ANSWER.—1. This is the minimum dose for an adult. Treatment should begin with this dose.

2. Yes.

3. This depends entirely on the progress of the case. If good results and no signs of intolerance follow, the drug can be given over long periods, always under medical supervision, of course. If no results follow the small dose, it may be increased cautiously.

ATROPHY OF THE PROSTATE — CHRONIC RHINITIS

To the Editor:—1. Is there any effective treatment of atrophy of the prostate gland? What is the prognosis? Would the injection of prostatic extracts be of any avail in this condition? 2. Could you recommend the use of any vaccines in chronic atrophic rhinitis? Kindly omit name.

———, Pennsylvania.

ANSWER.—1. There is not known any effective treatment of atrophy of the prostate. The injection of prostatic extracts may by suggestion improve the mental attitude of the patient.

2. There are a number of observers who report favorable results from the use of vaccines in atrophic rhinitis. Some of these vaccines are made from the *Coccobacillus foetidus* of Perez. Others are made from the predominating organisms isolated from the secretions beneath the crusts. The general consensus is that vaccines in atrophic rhinitis have little value.

TREATMENT OF GONORRHEA

To the Editor:—Can you give me the status and technic of intravenous medication of sodium iodide and sodium salicylate in acute and subacute gonorrheal urethritis? I have seen several references to articles recommending them.

H. M. KEIL, M.D., Portsmouth, Ohio.

ANSWER.—Neither sodium iodide nor sodium salicylate, when given by mouth, has any especial action in gonorrheal urethritis. On intravenous administration, the disturbance in the state of the blood colloids (colloidoclasis) might cause a nonspecific immunity reaction that might be of some value in such cases.

TREATMENT OF KELOID

To the Editor:—A young boy was bitten in the early summer by a horse. The wound was cauterized with fuming nitric acid, but owing to the summer vacation it was not treated by the family physician throughout the entire period of healing, with a resulting overgrowth of granulation tissue. This is covered with skin but is unsightly because raised above the surrounding skin area. Would radium or the roentgen ray reduce this growth or must it be removed with a scalpel? If radium, about how many exposures would be needed? Please omit name.

M.D., New York.

ANSWER.—The lesion in this case is evidently a keloid or hypertrophic scar. Removal by the knife or caustics should not be done. The scar is almost certain to return larger than before. It can be removed successfully with radium or the roentgen ray. They are equally satisfactory. Exposure should be made to the point of producing a slight erythema. It is often necessary to repeat these exposures several times. The results are usually surprisingly good.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 6. Sec., Dr. Harry C. De Vighne, Juneau.

CALIFORNIA: Los Angeles, Feb. 27. Sec., Dr. Charles B. Pinkham, 623 State Bldg., San Francisco.

COLORADO: Denver, April 3. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver.

CONNECTICUT: Hartford, March 13-14. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Bd., New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Board of Healing Arts, New Haven, Feb. 11. Connecticut Bd. of Healing Arts, Box 1895, Yale Station, New Haven.

IDAHO: Boise, April 3. Commissioner of Law Enforcement, Hon. F. E. Lukens, Boise.

KANSAS: Topeka, Feb. 14. Sec., Dr. Albert S. Ross, Sabetha.

MAINE: Portland, March 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

MONTANA: Helena, April 3-5. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Class A Medical Schools, Feb. 15-17. Dir., Dr. Everett S. Elwood, 1600 Walnut St., Philadelphia.

NEW HAMPSHIRE: Concord, March 8. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, March 13-14. Sec. Dr. J. M. Byrum, Shawnee.

PHILIPPINE ISLANDS: Manila, Feb. 14. Sec., Dr. José V. Gloria, 686 Ave. Rizel, Manila.

PORTO RICO: San Juan, March 6. Sec., Dr. Diego A. Biascoechea, 3 Allen St., San Juan.

RHODE ISLAND: Providence, April 5-6. Sec., Dr. B. U. Richards, State House, Providence.

VERMONT: Burlington, Feb. 21-23. Sec., Dr. W. Scott Nay, Underhill.

WEST VIRGINIA: Charleston, Feb. 8. State Health Commissioner, Dr. W. T. Henshaw, Charleston.

WISCONSIN: Madison, March 17. Sec., Basic Science Bd., Prof. M. F. Guyer, U. of Wisconsin.

Georgia October Examination

Dr. B. T. Wise, secretary of the Georgia Board of Medical Examiners, reports the written examination held at Atlanta, Oct. 11-12, 1927. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Six candidates were examined, all of whom passed. Fourteen candidates were licensed by reciprocity and 2 candidates were licensed by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University School of Medicine		(1927)	87
Emory University School of Medicine		(1926)	90
Chicago Medical School		(1925)	88
Tulane University of Louisiana School of Medicine		(1926)	89
University of Pennsylvania School of Medicine		(1927)	93
Meharry Medical College		(1927)	83

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College, Birmingham		(1913)	Alabama
Georgetown University School of Medicine		(1922)	Dist. Colum.
Emory University School of Medicine		(1926, 2)	N. Carolina
University of Louisville School of Medicine		(1924)	Kentucky
University of Maryland School of Medicine and the College of Physicians and Surgeons		(1904)	N. Carolina
Harvard University Medical School		(1926)	Kansas
University of Pennsylvania School of Medicine		(1926)	Mississippi
Medical College of the State of South Carolina		(1917)	S. Carolina
Meharry Medical College		(1927)	Tennessee
Vanderbilt Univ. School of Med.		(1917), (1925, 2), (1926)	Tennessee

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Harvard University Medical School		(1925, 2)	N. B. M. Ex.

Montana October Examination

Dr. S. A. Cooney, secretary of the Montana State Board of Medical Examiners, reports the written examination held at Helena, Oct. 4-6, 1927. The examination covered 10 subjects and included 5 questions. An average of 75 per cent was required to pass. Of the six candidates examined, 5 passed and 1 failed. Eleven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Illinois College of Medicine		(1926)	84
University of Michigan Medical School		(1927)	82.2
University of Nebraska College of Medicine		(1927)	86.7
University of Pittsburgh School of Medicine		(1926)	82.7
Marquette University School of Medicine		(1927)*	81.7

College	FAILED	Year Grad.	Per Cent
Hospital College of Medicine, Medical Department Central University of Kentucky		(1904)	59.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1912)	Missouri
College of Medical Evangelists		(1924)	California
Hahnemann Med. Coll. of the Pacific, San Francisco		(1912)	California
University of Colorado School of Medicine		(1926)	Colorado
Georgetown University School of Medicine		(1925)	Kansas
University of Michigan Medical School		(1925)	Michigan
Minneapolis College of Physicians and Surgeons		(1903)	Minnesota
University of Minnesota Medical School		(1920)	Minnesota
Ensworth Medical College, St. Joseph		(1905)	Kansas
Creighton University School of Medicine		(1923)	California
Vanderbilt University School of Medicine		(1921)	Virginia

* This candidate will receive his M.D. degree on the completion of one year's internship in a hospital.

Book Notices

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume II. Administration American Expeditionary Forces. By Colonel Joseph H. Ford, M.C. Prepared under the direction of Maj. Gen. M. W. Ireland, the Surgeon General. Cloth. Price, $3.40. Pp. 1123, with illustrations. Washington: Government Printing Office, 1927.

This volume of the history of the medical department in the World War concerns the organization of the office of the chief surgeon of the American Expeditionary Forces, the organization of hundreds of hospitals and hospital centers, and the evacuation of patients to the United States. It is interesting to know that Sir William Osler in January, 1916, recommended that three medical officers of the U. S. Army and three of the navy be detailed to study professional procedures in British base hospitals. No officer of our medical corps, however, was assigned as military observer with the German army previous to our entrance into the war. The medical observers with the British army submitted numerous reports to the surgeon general in Washington which had to do with the activities of the British army medical service. Six American officers serving as observers to the French government were organized into a mission in 1916. This mission, after the United States declared war, reported to Washington that St. Nazaire and Nantes offered the best facilities for the debarkation of the first American troops, and the French were requested to construct a cantonment at St. Nazaire to shelter 20,000 men.

The problems of the U. S. Medical Department began. The sick were to be cared for in a 300 bed hospital, but after its construction was well advanced the building was taken over for barracks for incoming troops. The French then turned over to the United States a military hospital at St. Nazaire with a capacity of 250 beds and another of 500 beds at Savenay, a few miles inland. The six members of the mission continued their activities until the arrival of General Pershing in Paris, June 13, 1917, when they joined his staff. With the arrival in Washington of the British and French missions in April, 1917, the United States was requested to assign six base hospitals and 116 medical officers to the British forces. The American Red Cross was called on to furnish these units for immediate transportation to France. The hospitals selected sailed between May 8 and May 25. Orders issued, May 26, designated a chief surgeon of the United States forces in France. The medical department was not directly represented on the general staff of the American Expeditionary Forces until Feb. 16, 1918, when the ten technical staff services were transferred from headquarters at Chaumont to the services of supply at Tours. Medical officers were then assigned as assistants to the chief surgeon's representative on the general staff and attached to sections G-1, G-2, G-3, G-4 and G-5. A subsection of G-4, the medical section, designated G-4-B, was organized and with this group the chief surgeon's representative identified himself. On the average the medical section of G-4 included four medical officers of field rank, two officers of the sanitary corps and a small clerical force. Base hospitals were the medical department units of the line of communications designed prior to the war to receive patients from the front and the evacuation hospitals. Four base hospitals were to be assigned to a division, but in the summer of 1918 their number was inadequate and remained so until the end of the war. The necessity for economy in personnel and material

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led to the organization in France of hospital centers, and, as the military situation developed, larger and larger centers were provided. Authority was given in December, 1917, to construct hospital centers at Allerey, Beaune, Mars and Nesves, and later at Nantes, Beau Desert, Langres, Rimaucourt, Limoges and Perigueux; other centers were gradually added at Savenay, Vichy, Toul, Kerhuon and on the Riviera; before the armistice, twenty hospital centers were in operation. The authorized capacity of these centers ranged from about 3,000 to 20,000 beds. A fair conception of their size is given in numerous pictures in this book. The center at Allerey, a typical example, is described in much detail.

The next section of the book describes briefly each base hospital from number 1 to base hospital number 238. Base hospital number 238 existed less than three months, during which time it cared for 802 patients. There are brief descriptions of 122 camp hospitals, giving the places at which they served and when and where they were demobilized. The army of occupation in Germany in February, 1919, comprised 10,406 officers and 251,833 men. These were rapidly reduced and on October 1 consisted of only 510 officers and 10,556 men. The largest hospital center for this group was in Coblenz, where evacuation hospital number 6 was established in a splendidly equipped German military hospital. Evacuation hospital number 4, located in a school house, had the eye, ear, nose, throat and medical services, and evacuation hospital number 2 had a urologic and contagious disease service. For the more remote areas, there was an evacuation hospital at Mayen and another at Prum. Evacuation hospital number 26 was established in a large hotel at Nauanahr to care for the forty-second division. Most of the professional work in these hospitals fell on the internists because the fighting was over. Hospital train number 70 was used by the American forces in Germany to evacuate disability cases to Antwerp for return home. An appendix of 250 pages in small type of reports of boards and official regulations ends this large and heavy volume. The book is fortunately well indexed.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANIMAL PARASITOLOGY, INCLUDING BACTERIOLOGICAL KEYS, ZOOLOGICAL TABLES AND EXPLANATORY CLINICAL NOTES. A Compendium for Internists. By E. R. Stitt, A.B., Ph.G., M.D., Rear Admiral, Medical Corps, and Surgeon General, U. S. Navy. Eighth edition. Cloth. Price, $6. Pp. 837, with 212 illustrations. Philadelphia: P. Blakiston's Son & Company, 1927.

The author attempted to reduce the size of this book by eliminating 100 pages but found it impossible because of advances in this field which made it necessary to add to the revised copy. The volume can still be carried in a good sized pocket. The fact that it was prepared originally as a manual for students at the naval medical school is perhaps accountable for the way in which the material is condensed. Results of chemical examination of the blood with the amounts of the substances found in pathologic conditions are tabulated. There is a table with which the carbon monoxide combining power of plasma may be computed. Other tables give the anatomic and physiologic normals as to weight and size of the organs and other parts of the human body. A table of foods shows their relative value in the vitamins. A concise arrangement of essential laboratory procedures in many diseases with the usual observations is another time saver. There are pictures of laboratory apparatus and pathologic material, and complete descriptions of the technic of many tests. In this revision, General Stitt was assisted by several associates in the navy medical corps.

LEHRBUCH DER SPEZIELLEN PATHOLOGIE UND THERAPIE DER INNEREN KRANKHEITEN: Für Studierende und Aerzte. Von Professor Dr. Med. Adolf Strümpell. Band II. Twenty-sixth edition by Professor Dr. Med. and Phil. Carly Seyfarth. Paper. Price, 50 marks. Pp. 982, with 208 illustrations. Leipsic: F. C. W. Vogel, 1927.

In the review of the first volume (THE JOURNAL, Oct. 15, 1927, p. 1356), reference was made to modifications in this edition, to other general matters about it, and to the esteem this excellent treatise of internal medicine has long enjoyed. The colored tables in the second volume illustrating the cellular changes in the blood in its different diseases are new. In place of the former five figures, there are now eight. Descriptions of diseases of the nervous system are practically unchanged. They occupy about two thirds of the volume. Chapters on hypertension and diseases of the glands of internal secretion are rewritten. The main innovation is the introduction of a new chapter in which are included diseases of nutrition, such as scurvy, rickets, pellagra, beriberi, sprue, osteomalacia and epidemic dropsy. These have been dealt with heretofore under various headings. They are now gathered together as vitamin-deficiency conditions and diseases closely related to such maladies. The volume ends with more than 200 prescriptions and a list of European health resorts, both grouped according to their particular therapeutic indications. As a result of experience in yearly revisions the size of the volume is a few pages less than that of the twenty-fifth edition, in spite of many improvements, of which only a few are mentioned here. It is to be hoped that this work will continue to be revised and be kept modern for many succeeding generations of practitioners who remain students, and for students who appreciate the more extensive works of the best authorities.

THE SCIENCE AND PRACTICE OF SURGERY. Volume I: General Surgery. Volume II: Regional Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., Senior Surgeon in Charge of Out-Patients, St. Thomas's Hospital, and Philip H. Mitchiner, M.D., M.S., F.R.C.S., Surgeon in Charge of Out-Patients, St. Thomas's Hospital. Cloth. Price, $12 per set. Pp. 795, with 330 illustrations, and pp. 955, with 290 illustrations. New York: William Wood & Company, 1927.

This is a new work on general and regional surgery produced in two volumes with two objects in view: "to place before the student a book sufficiently comprehensive to provide him with all that he will require in passing both his ordinary surgical examinations and any higher examinations, such as the Fellowship of the College of Surgeons, and to present a book of value as a work of reference to the medical practitioner." Volume I deals with general surgery and consists of 795 pages, including an index. It takes up the subject of general surgical procedures, inflammation, infections, injuries, gangrene, tumors, injuries and diseases of the various tissues and organs, including bones and joints, deformities, amputations, the roentgen ray in diagnosis and treatment, and anesthesia. Volume II deals with regional surgery and consists of 955 pages, including an index. The various regions are discussed, beginning with the head and proceeding in general toward the pelvis, though the arrangement is rather surprising in that the brain is considered before the scalp and skull; the spine is considered before the face, mouth, jaws, tongue, eyes or nose, and these are taken up in the order given. Except for these chapters, the arrangement is logical, but one is surprised not to find chapters dealing with the extremities. Whatever is given over to these regions is to be found only in Volume I, and this detracts from the general scheme of having a separate volume for regional surgery. Furthermore, even after consulting the indexes in the two volumes and the list of chapter titles, no account can be found of such important subjects as infections of the hand and of the palmar space. Certain of the data presented are indefinite, as under the discussion of tendon suture: "Early movement and faradism are necessary to prevent adhesions in the tendon sheaths"; but this is not definite information for a beginner. Bier, Braun and Kümmel advocate beginning motion at the end of one week, whereas in the Handbuch der praktischen Chirurgie it is advised that passive motion should be begun from about the sixth to the eighth day to three weeks, usually about the end of two weeks. Even certain one-volume surgeries, such as Rose and Carless' (also an English Surgery for students) give this definite information, the latter stating that motion should be begun at the end of from two to three weeks. The scope of the work is rather similar to that of the old favorite English textbook of Rose and Carless. The division into two volumes makes it more convenient to handle, but this is more than overbalanced by the failure to have the division as the volume titles indicate. The inclusion of after-treatment of operations is desirable. Also, the practice throughout both volumes, where applicable, of prefacing each chapter with a short account of applied surgical anatomy and physiology of the region or organ discussed is to be commended. However, the subject of surgery is so large that it would seem wiser to devote all the space to surgery; for any student

should be expected to own a textbook on surgical anatomy and one on physiology. The work is well printed and well illustrated, most of the illustrations being original. The subject matter in general is well arranged. The material is well presented but does not differ much from the usual short textbook on surgery. It is hardly a work that will appeal to the average American student or practitioner as the one book to own on the science and practice of surgery.

DIE PRAXIS DER PHYSIKALISCHEN THERAPIE. Ein Lehrbuch für Ärzte und Studierende. Von Dr. A. Laqueur, Dirigierendem Arzt der hydrotherapeutischen Anstalt und des medikomechanischen Instituts am städtischen Rudolf Virchow-Krankenhause zu Berlin. Third edition. Paper. Price, 18 marks. Pp. 357, with 98 illustrations. Berlin: Julius Springer, 1926.

The present edition is an outgrowth of a rapidly accumulating literature on physical therapy, and the desire on the part of the author to bring the material on this specialty down to date. The author has therefore attempted to revaluate and correlate the newer facts with the older material already incorporated in the earlier editions. Thus, diathermy and phototherapy, especially, come in for careful revision and a restatement on the method of treatment. The book, which is divided into two parts, theoretical consideration and practical application, is a comprehensive survey of the entire subject of physical therapy, and discusses concisely and in detail the effects and methods of application of hydriatic measures, phototherapy and electrotherapy, massage, manipulation and mechanotherapy. Hydrotherapy with its variations and methods of application is treated with great detail and intelligence. Indeed, this particular part of the book is a complete epitome on the subject. Both diathermy and phototherapy are discussed with comprehension and reserve. Diathermy with its ability to produce deep heating effects has its limitations and contraindications which the author takes occasion to emphasize frequently. Phototherapy, according to the author, is not limited to the mercury quartz light, for the carbon arc, sunlight baths and even the electric cabinet baths have fields of usefulness that are frequently overshadowed because of the greater publicity that the mercury vapor lamp is at present receiving. No claim is made for the specificity of physical therapy, but the statement is emphasized that physical agents act only in the capacity of adjuvants. One closes this volume with an impression that physical therapy, intelligently applied, increases the flexibility if not the specificity of the armamentarium of the physician; that diathermy is frequently contraindicated in many conditions that have been heretofore exploited by the enthusiast, and that the basis for the intelligent application of many physical measures is dependent not only on the selection of the proper instrument but also on a thorough knowledge of the pathophysiology associated with the disease.

KEEPING THE BABY WELL: With Special Reference to General Management and Dietetics. By John Howell West, Ph.B., M.D., Chief of Department of Pediatrics at the Easton Hospital. Cloth. Price, $2 net. Pp. 233. New York: G. P. Putnam's Sons, 1927.

This little book is one of a number which cover the same subjects. It is not written for the physician but for the mother. It compares favorably with many other books written for the laity on the care of the infant. Unusually wide in scope and up to date for such a book, it presents a large amount of material in a clear and concise manner. The chapter on feeding is open to the criticism that it gives patients formulas which are likely to be used without the advice of a physician. Many chapters, such as those on physical and mental development, exercise, airing and posture, and nursery procedures, are put in very intelligible and practical form.

CULTIVATING THE CHILD'S APPETITE. By Charles Anderson Aldrich, M.D., Associate Attending Physician, Children's Memorial Hospital, Chicago. With a foreword by Clifford G. Grulee, M.D., Professor of Pediatrics, Rush Medical College. Cloth. Price, $1.60. Pp. 127. New York: Macmillan Company, 1927.

Those interested in the study of infants and children have always found it difficult to lay down standards for the normal child. The height-weight index is the usual basis on which normality is judged. The author of this book believes that thoughtless attempts on the part of parents and physicians to make children conform to a standard are responsible for much of the problem of anorexia. Pediatricians are agreed that from 50 to 75 per cent of practice is made up of children who do not eat. In this book a sharp distinction is drawn between hunger and appetite. The author insists that the solution of the feeding problem lies in a constant effort to build up appetite. Parents should not destroy appetite by forcing the child to eat more than it wants, nor should they force feedings when appetite is lacking because of illness. The value of prevention is emphasized. It is suggested that parents be educated in the causes of anorexia as far as they have been determined. The author states that if good appetites are to be developed, especial care must be taken not to overfeed the nursling. Treatment of the established case is handled along psychologic lines. Physical causes are first sought for and removed. Here again it is pointed out that thought should be given to appetite alone. The subjects of food intake and gain in weight must be forgotten. The proper atmosphere must be created at meal time, and general measures such as fresh air and sunshine must be utilized. This book marks a direct attempt to bring about a reduction in the number of children who suffer from lack of appetite. It is simply written and easily understood. It should aid in the solution of the problem.

HEALTHY GROWTH. A Study of the Relation Between the Mental and Physical Development of Adolescent Boys in a Public Day School. By Alfred A. Mumford. With a foreword by Sir Arthur Keith, M.D., D.Sc., F.R.C.S. Cloth. Price, $5. Pp. 348, with illustrations. New York: Oxford University Press, 1927.

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All are agreed that, in order to bring about the best development of the child, every provision must be made for healthy growth. This can be accomplished by providing suitable environment and favorable opportunity as well as skilled instruction and proper supervision. But it is difficult to determine what constitutes healthy growth. Increase in height, simultaneously with increase in weight, is easily measured, but it is only an indication of healthy growth when it is accompanied by increased capacity for putting forth effort in suitable directions. This book is limited to the study of growth in the adolescent boy. The relationship between the physical growth of the individual boy and his school progress is estimated by comparing him with the average boy of the whole school. The average boy is selected as a convenient starting point. The author discusses his methods of making physical measurements and gives figures on the relative growth of the school boy in height, weight, chest girth and vital capacity. He discusses the bouyancy index as a standard of physique. He considers the problem of fatigue and stamina. He quotes freely from the literature, and discusses the previous investigations in this field. The conclusion is that there is a definite positive relationship between measurements of mental growth and physical development. However, the relationship is insufficient for trustworthy prediction. It does indicate the necessity for making ample provision during the education process for all the circumstances favorable to body development, especially for fresh air, physical exercise, recreation and rest.

TONIC HARDENING OF THE COLON. By T. Stacey Wilson, M.D., B.Sc., F.R.C.P. Cloth. Price, $2.50. Pp. 210. New York: Oxford University Press, 1927.

The author of this volume describes a single physical observation—the palpable colon—and builds about it an entire system of medicine. Symptoms referable to practically all the systems of the body, ranging from angina pectoris to acute mania with suicidal tendencies, are said to have this physical condition as their underlying cause. A toxin evolved by a micro-organism is said to underly the condition, though no scientific proof is brought forward and no references are quoted to substantiate the statement. Finally, an unorthodox treatment, to gastro-enterologists of this country at least, is recommended as a positive and immediate cure of not only the physical condition described but also all of the resulting phenomena. The author believes and quotes many histories to substantiate his assertion that free catharsis and intestinal antiseptics bring about an immediate and rapid cure.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

PRACTICAL GUIDE TO DISEASES OF THE THROAT, NOSE AND EAR. For Senior Students and Junior Practitioners. By William Lamb, M.D., C.M., M.R.C.P., Consulting Surgeon, Birmingham Ear and Throat Hospital. Revised by Frederick W. Sydenham, M.D., C.M., F.R.C.S., Honorary Surgeon, Birmingham Ear and Throat Hospital. Fifth edition. Cloth. Price, $4.50. Pp. 450, with 109 illustrations. New York: William Wood & Company, 1927.

Brief and apparently popular handbook for young physicians who wish to be familiar with otolaryngology.

PYELOGRAPHY: ITS HISTORY, TECHNIQUE, USES AND DANGERS. By Alex. E. Roche, M.A., M.D., M.Ch., Chief Assistant to a Surgical Unit, St. Bartholomew's Hospital. With an introduction by Sir John Thompson-Walker, O.B.E., M.B., C.M., Senior Urologist and Lecturer on Urology, King's College Hospital. Cloth. Price, $3.50. Pp. 118, with 16 illustrations. New York: William Wood & Company, 1927.

Technic and sign-posts of an intricate urologic manipulation.

DICTIONARY OF BACTERIOLOGICAL EQUIVALENTS — FRENCH-ENGLISH; GERMAN-ENGLISH; ITALIAN-ENGLISH; SPANISH-ENGLISH. By William Partridge, F.I.C., Joint Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance. Cloth. Price, $4. Pp. 141. Baltimore: Williams & Wilkins Company, 1927.

Helpful guide in the maze of modern bacteriologic nomenclature.

COURS D'HYGIÈNE. Professé à l'Institut d'Hygiène de la faculté de médecine de Paris. Tome I et Tome II. Sous la direction de Léon Bernard, professeur à la faculté de Paris, et Robert Debré, professeur agrégé à la faculté de Paris. Paper. Pp. 1247 and 811, with illustrations. Paris: Masson & Cie, 1927.

Complete textbook of hygiene in two large volumes.

MAX VON PETTENKOFER. His Theory of the Etiology of Cholera, Typhoid Fever and Other Intestinal Diseases; a Review of His Arguments and Evidence. By Edgar Erskine Hume, M.D., Dr.P.H., LL.D., Major, Medical Corps, U. S. Army. Cloth. Price, $1.50. Pp. 142, with illustrations. New York: Paul B. Hoeber, Inc., 1927.

Interesting presentation of views on water supplies.

A SYNOPSIS OF PHYSIOLOGY. By A. Rendle Short, M.D., B.S., B.Sc., Surgeon to the Bristol Royal Infirmary, and C. I. Ham, M.B., B.Ch., M.R.C.S., Demonstrator in Physiology to the University of Bristol. Cloth. Price, $3.50. Pp. 258, with 27 illustrations. New York: William Wood & Company, 1927.

A short handbook of an evergrowing subject.

DIE KOLLAPSTHERAPIE DER LUNGENTUBERKULOSE MIT BESONDERER BERÜCKSICHTIGUNG DES KÜNSTLICHEN PNEUMOTHORAX. Von Primarius Dr. Hanns Maendl, Chefarzt der Heilanstalt Grimmenstein. Paper. Price, 18 marks. Pp. 206, with 116 illustrations. Vienna: Julius Springer, 1927.

The principles and results of artificial pneumothorax in tuberculosis.

THE INFANCY OF MEDICINE. An Enquiry into the Influence of Folk-Lore upon the Evolution of Scientific Medicine. By Dan McKenzie, M.D., F.R.C.S.E., F.S.A. Cloth. Price, $6. Pp. 421. New York: Macmillan & Company, 1927.

Pleasing essays in the field of medical folklore.

THE CONCISE OXFORD DICTIONARY OF CURRENT ENGLISH. By H. W. Fowler, and F. G. Fowler. Cloth. Price, $7.50 the set (with a "Dictionary of Modern English Usage"). Pp. 1064. New York: Oxford University Press, 1927.

What words will be used this year and why.

ORGANIC INHERITANCE IN MAN. By F. A. E. Crew, M.D., D.Sc., Ph.D., Director of the Animal Breeding Research Department, the University, Edinburgh. Cloth. Price, 12/6 net. Pp. 214, with illustrations. Edinburgh: Oliver & Boyd, 1927.

Survey of factors affecting sex characters.

THE PROHIBITION MANIA. A Reply to Professor Irving Fisher and Others. By Clarence Darrow, and Victor S. Yarros. Cloth. Price, $2.50. Pp. 254, with illustrations. New York: Boni & Liveright, 1927.

Demolishment of Professor Fisher as an economist, at least so far as relates to prohibition.

A DICTIONARY OF MODERN ENGLISH USAGE. By H. W. Fowler. Cloth. Price, $7.50 the set (with the "Concise Oxford Dictionary of Current English"). Pp. 742. New York: Oxford University Press, 1927.

A fascinating discussion of correct diction, full of humor and pathos.

THE ENDOCRINES IN GENERAL MEDICINE. By W. Langdon Brown, M.A., M.D., F.R.C.P., Physician to St. Bartholomew's Hospital. Cloth. Price, $3. Pp. 144. New York: Paul B. Hoeber, Inc., 1927.

Status of our knowledge of the glands and suggestions for research.

UEBER BEURTEILUNG UND BEHANDLUNG VON KRANKEN. Von Dr. Richard Siebeck, Professor und Direktor der medizinischen Poliklinik in Bonn. Paper. Price, 3.60 marks. Pp. 116. Berlin: Julius Springer, 1928.

Monograph concerning fundamental principles of therapeutics.

THURSTON'S PHILOSOPHY OF MARRIAGE. The Conclusions of a Qualified Observer. By William Robert Thurston. Boards. Price, $2 net. Pp. 32, with illustrations. New York: Tiffany Press, 1927.

Strange notions regarding sexual relationships.

THE WIDENING PATH. By Eleanor Thorne. Cloth. Price, $2. Pp. 167. New York: Avondale Press, 1927.

A novel—but why?

LES DONNÉES ET LES INCONNUES DU PROBLÈME ALIMENTAIRE. VIII. Tome 1. Le problème de l'alimentation.—IX. Tome 2. La question des vitamines. Par Lucie Randoin, directeur du laboratoire de physiologie du centre de recherches sur l'alimentation (Institut des Recherches Agronomiques), et Henri Simonnet, vétérinaire diplomé de l'école d'Alfort. Boards. Pp. 344 and 480, with illustrations. Paris: Universitaires de France, 1927.

PULMONARY TUBERCULOSIS: Its Etiology and Treatment. A Record of Twenty-Seven Years' Observation and Work in Open-Air Sanatoria. By David C. Muthu, M.D., M.R.C.S., L.R.C.P., Associate of King's College, London. Second edition. Cloth. Price, $5. Pp. 381, with 28 illustrations. New York: William Wood & Company, 1927.

THE FOUNDATION OF HEALTH. A Manual of Personal Hygiene for Students. By William Barnard Sharp, S.M., M.D., Ph.D., Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas. Second edition. Cloth. Price, $2.50 net. Pp. 288, with 20 illustrations. Philadelphia: Lea & Febiger, 1927.

THE EXTRA-OCULAR MUSCLES. A Clinical Study of Normal and Abnormal Ocular Motility. By Luther C. Peter, A.M., M.D., Sc.D., Professor of Ophthalmology in the Medical Department of Temple University. Cloth. Price, $4 net. Pp. 294, with 103 illustrations. Philadelphia: Lea & Febiger, 1927.

A HANDBOOK OF OPHTHALMOLOGY. By Humphrey Neame, F.R.C.S., Ophthalmic Surgeon, University College Hospital, and F. A. Williamson-Noble, F.R.C.S., Assistant Ophthalmic Surgeon, St. Mary's Hospital. Cloth. Price, $4. Pp. 312, with 194 illustrations. New York: William Wood & Company, 1927.

DIE LAGERUNG VERLETZTER UND ERKRANKTER GLIEDMASSEN. Leerschienen und verbandlose Wundbehandlung. Von Geh. Med.-Rat. Prof. Dr. Heinrich Braun. Paper. Price, 12 marks. Pp. 118, with 101 illustrations. Leipsic: Johann Ambrosius Barth, 1928.

POLIOMYELITIS WITH ESPECIAL REFERENCE TO THE TREATMENT. By W. Russell MacAusland, M.D., Surgeon-In-Chief, Orthopedic Department, Carney Hospital, Boston. Cloth. Price, $5.50 net. Pp. 402, with 173 illustrations. Philadelphia: Lea & Febiger, 1927.

AN ELEMENTARY LABORATORY GUIDE IN GENERAL BACTERIOLOGY. By Harold J. Conn, Soil Bacteriologist, New York Agricultural Experiment Station. Cloth. Price, $3. Pp. 165, with 27 illustrations. Baltimore: Williams & Wilkins Company, 1927.

CONTRIBUTIONS TO MEDICAL SCIENCE. Dedicated to Aldred Scott Warthin. Willard J. Stone, Editor. Carl Vernon Weller, Chairman of Editorial Committee. Leather. Price, $10. Pp. 720, with illustrations. Ann Arbor: George Wahr, 1927.

EPIDEMIC INFLUENZA. A Survey. By Edwin O. Jordan, Ph.D., Sc.D., Professor of Hygiene and Bacteriology, University of Chicago. Cloth. Price, $5. Pp. 599, with 98 illustrations. Chicago: American Medical Association, 1927.

NOUVEAU TRAITÉ DE MÉDECINE. Fascicule XXI. Nerfs.—Sympathique. Névroses. Par G. H. Roger, Fernand Widal, et P. J. Teissier. Boards. Price, 85 francs. Pp. 900, with illustrations. Paris: Masson & Cie, 1927.

TRANSACTIONS OF THE THIRTY-SECOND ANNUAL MEETING OF THE AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY, 1927. Cloth. Pp. 495, with illustrations, Chicago, 1927.

THE INJECTION TREATMENT OF VARICOSE VEINS. By A. H. Douthwaite, M.D., M.R.C.P. Second edition. Paper. Price, 3/-net. Pp. 43. London: H. K. Lewis & Company, Ltd., 1928.

ANNUAL REPORT FOR THE YEAR 1926 OF THE SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH. Paper. Pp. 53. Johannesburg, 1927.

Medicolegal

Remedy by Appeal from Judgment in License Case

(Grisso v. Superior Court et al. (Calif.), 257 Pac. R. 547)

The District Court of Appeal of California, first district, division 1, in denying the petitioner a writ of mandamus to compel the superior court in and for Alameda County to take jurisdiction of and determine the application of the petitioner for a review of an order of the board of medical examiners revoking his certificate to practice medicine and surgery, says that it was alleged that the court had sustained a demurrer filed by the board and refused to take jurisdiction of the cause and to review the decision of the board. Whether or not the order of the superior court sustaining the demurrer to the petition for the writ of review was made with leave to amend did not appear from the record, but it was immaterial whether it was or was not, for if it was so made, and the petitioner declined to amend, the proceeding necessarily would have terminated the same as if the order were made without leave to amend, in a judgment of dismissal; and therefore, in either event, the petitioner was afforded a complete and effective remedy by appeal from such judgment to correct any error that may have been committed by the court in sustaining the demurrer. That being so, the petitioner was not entitled to invoke a proceeding in mandamus to serve the purpose of an appeal. Moreover, the action of the trial court in ruling on the demurrer showed that it did not refuse to entertain jurisdiction of the certiorari proceeding, but, on the contrary, proved that it did assume jurisdiction thereof and, after having so done, acted judicially on the matter before it. Therefore, since it exercised its jurisdictional powers, either correctly or erroneously, the result of such exercise could not be reviewed by mandamus, but only by way of appeal.

Testimony of Physicians in Disputed Insurance Case

(Penick v. Metropolitan Life Ins. Co. (Ky.), 295 S. W. R. 900)

The Court of Appeals of Kentucky, in reversing a judgment on a verdict directed for the defendant in this action on a life insurance policy, says that it was insisted that only those who are engaged in the actual business of passing on the desirability of insurance risks are qualified to testify as to the practice of insurance companies in accepting or rejecting applications, and that the local physicians were not competent witnesses in this case. This question was fully considered in *New York Life Ins. Co.* v. *Long*, 211 Ky. 656, 277 S. W. 978, and the rule announced that physicians who had been acting for several years as medical examiners for life insurance companies were qualified to express an expert opinion as to whether, in accordance with the custom usually prevailing among those engaged in life insurance business, the particular applicant would have been accepted if his representations had been substantially true.

Under the rule in Kentucky a representation in an application, though innocently made, will avoid the policy if the representation is both false and material. The burden of proof is on the company, and, where a reputable physician testifies that he examined the insured and found him to be suffering from a particular disease, there is nothing on the question of falsity to submit to the jury, unless the witness is impeached or contradicted by other evidence.

In the instant case there was little, if any, evidence that the insured was suffering from heart disease or diabetes prior to his application and his examination by the company's physician. On the contrary, the report of the examining physician showed that the condition of the insured was then normal, and supported the statements contained in the application. Therefore, on the question of the falsity of the statements that the insured had not had heart disease or diabetes, the evidence, to say the least, was conflicting and such as to have made the peremptory instruction improper. That being true, the propriety of the court's action in awarding the peremptory instruction depended on the falsity and materiality of the statement that the insured, except in one instance, had not been treated by a physician.

The experts did not go so far as to say that it was the practice among insurance companies to reject an applicant, regardless of the disease or cause for which he was treated, who falsely stated that he had not theretofore been examined by a physician. An applicant may have been treated for a cold or a slight burn or cut, in which event the false statement that he had not been treated by a physician would be wholly immaterial. For this reason this court is not prepared, in the absence of uncontradicted evidence to that effect, to hold as a matter of law that in all cases a false statement that the applicant had not been treated by a physician is so material as to avoid the policy. In a case in which the beneficiary is deprived of the evidence of the insured, it is not always practicable to contradict by the evidence of experts a physician who examined the insured prior to his application for insurance. In many instances all that the beneficiary can do is to offer evidence of facts and circumstances which tend, if true, to show that the physician's diagnosis was incorrect, and where this is done the question is for the jury, and not for the courts.

Injury from Agent Examining Throat with Teaspoon

(National Life & Accident Ins. Co. v. Cruso (Ala.), 113 So. R. 396)

The Supreme Court of Alabama, in reversing a judgment which was rendered for the plaintiff, and remanding the cause, says that the evidence for the plaintiff tended to show that an agent of the defendant insurance company went to see her touching a claim which she had presented for a sick benefit under a policy of insurance in the company, and in the course of their interview the agent thrust or inserted a teaspoon into the plaintiff's swollen throat, causing abrasion and injury. The first count of the complaint was for assault and battery, a trespass by direct act of the corporate defendant. There was no evidence that the act complained of was by any managing officer of the company, by his direction, or with his knowledge and acquiescence. Nor was there any evidence of ratification of an assault and battery on the plaintiff. The evidence was that the local agent, not a physician, was sent by the superintendent to give notice of the rejection of the claim, or to see the plaintiff about the claim. The defendant was entitled to an affirmative charge as to this count. Its refusal was error.

The second count was in case, based on the doctrine of respondeat superior (let the master answer). It charged that the defendant was in the insurance business; that the plaintiff was a policyholder, and that the defendant's servant or agent, while acting within the line or scope of his employment, negligently injured the plaintiff's throat by thrusting a spoon into it, lacerating and injuring it as the proximate consequence of such negligence, etc. Demurrer going to the point that no relationship was shown from which a duty of care arose, that the averment of negligence was general and a mere conclusion, was not well taken. A duty of care is present in all cases in which one proceeds by direct act to manipulate the person of another. The nature of the injury was expressly averred. Demurrer to this count was properly overruled. Injury to the parts as a result of negligence due to unskilfulness or use of an unsuitable or unsterilized instrument was within the issue presented by this count.

It was the province of the jury, on consideration of the whole evidence, to find the truth of the case, accepting the version of either party on one point and rejecting it on another, as its judgment should direct. In the light of this rule, some evidence supported an inference that the agent was authorized to look into the merits of the claim on the policy, the fact of sickness or not from a trouble involving the throat as claimed. If such was the scope of his employment, and the agent undertook an examination of the throat by the use of a teaspoon, such act was within the scope of his employment, although he had no authority to do the work properly assigned to an examining physician. In other words, having the duty to investigate the matter of sickness or not, whatever he did to that end was within the scope of his employment, even if opposed to instructions from his company. On the other hand, if he was sent merely to give notice of a rejection of the claim, with no authority, express or implied, to investigate the physical condition of the plaintiff, his act

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in using the spoon, if he did, was without the scope of his employment, and it would be immaterial whether he did so of his own notion or at the request of the plaintiff. There was no error in refusing an affirmative charge for the defendant as to this count.

Validity of Restriction on Sales of Drugs—Aspirin

(State v. Zotalis (Minn.), 214 N. W. R. 766)

The Supreme Court of Minnesota, in affirming a judgment of conviction of the defendant of violating section 5814 of the general statutes of 1923 of that state, says that the statute prohibits any one not a registered pharmacist or a dealer having such a pharmacist in charge of his place of business from retailing drugs or medicines or poisons, except when the shop of the seller is more than two miles from a drug store, and excepting twenty-three articles in common use. The defendant conducted a confectionery store. He was not a pharmacist and did not employ one. He sold aspirin, and his conviction was for doing it. The aspirin was in a container, with a label stating that it contained five-grain aspirin tablets, that a dose was one or two tablets, and that it was distributed by a designated laboratory and chemical company of Minneapolis. Section 5805 of the general statutes provides that the term "drugs, medicines, and poisons" shall include all substances commonly kept in drug stores and used in compounding medicines or sold for medicinal purposes. Aspirin is a coal tar product commonly kept in drug stores and is used and sold for medicinal purposes. It is a drug or medicine within the statute. It is not a proprietary or "patent" medicine.

The statute should be sustained if enacted with reasonable reference to the public health or welfare. If intended merely to give a monopoly to pharmacists or druggists by restricting sales to them, it is not sustainable. It is sustainable only as a police measure. The legislature thought that the dangers incident to the prohibited sales justified regulation. That no technical skill is required in making a sale does not prove the statute invalid. The pharmacist knows where to procure a pure and genuine article, and his prescribing physicians will require him to furnish a pure drug. The restriction of the sale of aspirin as provided by the statute is within the legislative discretion.

Rules and Facts Favorable to Roentgenologist

(McCoy v. Buck (Ind.), 157 N. E. R. 456)

The Appellate Court of Indiana, in reversing a judgment for $2,500 damages rendered in favor of plaintiff Buck, says that she brought this action to recover for injuries which she alleged that she had sustained while a patient under the care and treatment of the defendant, a roentgen-ray specialist, because of his alleged malpractice. In discussing the questions involved in this case, this court must do so in view of the holding of the supreme court of Indiana in *Edwards* v. *Uland*, 193 Ind. 376, 140 N. E. 546, wherein it was held that a physician or surgeon, and this court includes also one who is a roentgen-ray expert, is not an insurer, and does not bind himself to make a correct diagnosis and effect a cure or to respond in damages. He is only bound to possess reasonable skill and to use ordinary care, and, if he makes a mistake in his conclusion, he is excused from liability if, possessing reasonable skill, he has used ordinary care. He is not liable for an honest mistake in judgment. That case further holds that a failure to cure is not enough, in itself, to raise an inference of negligence in the diagnosis and in the treatment adopted. The doctrine of res ipsa loquitur (the thing speaks for itself) is therein denied so far as it might apply to that case, and, this court might say, to this one.

The principles here involved were considered by this court in *Funk* v. *Bonham*, 151 N. E. 22, and the doctrine was again there announced that, generally speaking, no inference of negligence can be drawn from the result of the treatment by a physician or surgeon, and that, in the absence of a special contract, he is not an insurer, and there must be evidence of negligence by witnesses qualified to testify. Only those are qualified to testify as to whether there was negligence in the method of treatment who themselves possess the skill required to administer such treatment, who are themselves experts in such treatment, and to them the jury must listen.

The uncontradicted evidence in the instant case showed that the defendant had the knowledge and skill to treat the plaintiff for eczema with a roentgen-ray machine; that the treatment of that disease by roentgen ray is a proper treatment, and recognized by all authorities; that the plaintiff was suffering with that disease; that the defendant treated her but once therefor with a roentgen-ray machine, using a standard machine. All the expert witnesses who testified as to whether the method of treatment used by the defendant, as given by himself, was proper, testified that such method was proper for the treatment of eczema. There was some contention that there was a dispute in the evidence as to whether the defendant placed his instrument so that the focal distance from the diseased parts was 7, 7½ and 8 inches, the plaintiff having testified that the instrument was as close to her body as it could be without touching it. But this did not say that the focal distance was thereby closer to the diseased parts than the defendant had testified. The defendant's evidence as to his method of treatment was uncontradicted.

There was some discussion as to the effect of the subsequent treatment of the affected parts by other physicians, and as to whether the injuries suffered might not have resulted from subsequent improper treatment, but this court does not need to determine that. It is sufficient for this court to hold that the defendant, by the undisputed evidence, was fully qualified to use a roentgen-ray machine, that he used approved methods in treating the plaintiff, using a standard machine, and, it not appearing that he did not use ordinary care, he could not be required to respond in damages, even though the injuries suffered were the result of the use of the roentgen-ray machine.

Leaving Piece of Instrument in Nose—As to Evidence

(Slimak v. Foster (Conn.), 138 Atl. R. 153)

The Supreme Court of Errors of Connecticut, in remanding this cause with directions to enter judgment on a verdict for the plaintiff which had been set aside on the defendant's motion, says that the plaintiff offered evidence from which the jury might reasonably have found that while the defendant, a physician and surgeon specializing in the treatment of diseases of the eye, ear, nose and throat, was performing an operation on the plaintiff for the removal of a bony spur from the left nostril of his nose, a blade of the instrument which he was using broke off in the cartilage of the nose and remained lodged in it. The defendant did not remove this broken piece or inform the plaintiff of its presence but gave him treatment two or three times thereafter; nor did he complete the removal of the nasal spur. About six weeks later the defendant himself removed the fragment of instrument with his fingers. The verdict for the plaintiff was set aside on the ground that although two specialists testified as to subsequent examinations and treatment of the plaintiff's nose, no expert evidence was offered that the defendant's failure to remove the broken piece was negligent or that a reasonably skilful specialist would have extracted it and removed the bony spur. The validity of this ground was the principal question presented by this appeal.

In determining what constitutes the reasonable and ordinary care, skill and diligence which a physician or surgeon specializing in diseases of certain organs is required to exercise, the test is that care, skill and diligence which practitioners in the same general neighborhood and the same special line have and exercise in like cases. It was therefore of controlling importance in this case to ascertain whether, in allowing the piece of instrument to remain and in discontinuing his attempt to remove the nasal spur, the defendant measured up to this standard. When a topic requiring special experience of an expert forms a main issue in the case, the evidence on that issue must contain expert testimony or it will not suffice.

Of course, many cases may and do arise in which there is manifest such obvious gross want of care or skill as to

afford, of itself, an almost conclusive inference and dispense with the necessity of testimony by expert witnesses. Such cases constitute the only generally recognized exception to the rule. Even if it should be held that the present case did not fall within this exception, this court is unable to agree with the trial court that the plaintiff's evidence was necessarily so lacking in the expert testimony required by the rule as thereby to defeat his recovery. To be sure, there was no specific expression of opinion that the conduct of the defendant was negligent or unskilful, the expert witnesses being manifestly and naturally cautious in characterization, in the absence of more exact information as to the precise conditions at the time of the operation than could be afforded by the plaintiff. This must of necessity be true in many cases, and to demand a positive condemnation of the operator's course as a prerequisite to recovery would, in such cases, be prohibitory of any recovery therein. In this case one specialist testified that usually foreign objects have to be removed, though sometimes they work out, and that he should think that the broken part of the instrument in the plaintiff's nose would cause pain or discomfort. Another expert testified that the proper remedy to improve the plaintiff's condition would be the removal of the spur, and that so far as he could see there was nothing to have prevented its removal. The court thinks that this testimony, considered in connection with the other evidence of these surgeons, and in the light of the lay evidence, constituted sufficient "evidence from expert witnesses tending to show improper or unskilful treatment" to satisfy at least the minimum requirements of the rule, and to sustain the verdict, especially as the defendant introduced no evidence whatever, either in denial of the plaintiff's claim that he dismissed him without informing him of the piece of instrument in his nose, or in justification of his failure to remove it or the spur.

Total Disability According to a Number of Decisions

(Cato v. Aetna Life Ins. Co. et al. (Ga.), 138 S. E. R. 787)

The Supreme Court of Georgia, citing for its statements a number of decisions of various courts, says that total disability exists when one is wholly disabled from pursuing the usual and customary duties of his employment on which he must depend for a living. Total disability is the antithesis of partial disability. One is the opposite of the other. It follows as a necessary consequence that an insurer is not liable as for a total disability when the accident or disease has merely prevented the insured from doing as much in a day's work as before. Such lessened earning capacity may be a case of partial disability, but not a case of total disability. But when the insured is incapacitated from performing any substantial part of his ordinary duties, a case of total disability is presented, although he is still able to perform some parts of his work.

The courts in most jurisdictions hold that total disability is inability to do substantially all of the material acts necessary to the transaction of the insured's business or occupation, in substantially his customary and usual manner. Total disability does not mean absolute physical inability to work at one's occupation, or to pursue any occupation for wages or gain; but it exists if the injury or disease of the insured is such that common care and prudence required him to desist and he did in fact desist from transacting his business. It is sufficient if the insured's sickness was of such a character that ordinary care required or authorized him to desist and he did desist from performing the labors incident to his occupation; in such circumstances total disability exists.

In the instant case, if the insured, who was afflicted with tuberculosis, had quit pursuing his occupation of a weaver on account of his disease, then, under the evidence of the medical experts that it was unwise for him to work in the condition of his health, it would have been for the jury to say whether ordinary care required him to abandon his occupation, and whether total disability existed, under the principle of law that matters of this kind are ordinarily questions of fact for the jury. But as the insured did not abandon his calling on account of his disease, this principle was not applicable.

Society Proceedings

COMING MEETINGS

American College of Physicians, New Orleans, March 5-9. Mr. E. R. Loveland, The Covington, 37th and Chestnut Streets, Philadelphia, Sec'y.

SOUTHERN SURGICAL ASSOCIATION

Fortieth Annual Session, held at Augusta, Ga., Dec. 13-15, 1927

(Concluded from page 322)

Intra-Arterial Injections of Sodium Iodide for Determining The Condition of the Circulation in the Extremities

DR. A. O. SINGLETON, Galveston, Texas: Intra-arterial injection of sodium iodide with roentgenologic examination accurately reveals the condition of the blood vessels and is apparently harmless when there is good capillary circulation and a free return of blood back into the general circulation. In aneurysms of the extremities, both arterial and arteriovenous, valuable information is gained in regard to the blood vessels entering and leaving the aneurysms, and to the collateral circulation, which may be of great assistance in determining the method of treatment. In spontaneous gangrene from venous or arterial obstruction, the method is not safe and probably should not be used. It is contraindicated in moist gangrene with venous obstruction, and also in arteriosclerosis because of the narrowing in the arterioles and capillaries. In thrombo-angiitis obliterans the capillaries are usually much more normal and there is better collateral circulation; therefore, in this condition the method should not be harmful.

Primary Hypernephroma of the Liver

DR. IRVIN ABELL, Louisville, Ky.: A girl, aged 13 months, had a large, rounded, movable mass filling the right half of the abdomen and extending to the left of the midline, but was otherwise normal. At operation, the tumor was found to originate in the liver. It was seemingly distinctly encapsulated and connected with the right lobe of the liver by a compressible amount of liver tissue, its attachment corresponding to the entire anterior border of the right lobe extending from the tip of the twelfth rib to a point slightly to the left of the umbilicus. The glands along its lower border showed definite enlargement. The other abdominal organs were normal. The patient made an uneventful recovery and seventeen months after operation did not present evidence of recurrence. The microscopic diagnosis was hypernephroma.

Treatment of Burns

DRS. FREDERIC W. BANCROFT and CHARLES S. ROGERS, New York: The total number of burns that received tannic acid treatment was 114, with twenty-three deaths, a mortality of approximately 20 per cent. The deaths occurring within forty-eight hours were attributed to shock; the deaths occurring after this period were classified as deaths due to infection and toxemia. Among the complications in this group of cases were parturition in two cases; illuminating gas poisoning (condition present on admission), chronic pulmonary tuberculosis, acute nephritis, fracture of the skull and mandible, and fracture of the pelvis with multiple lacerated wounds of the scalp, one case each. In this series, eleven patients died of shock, or approximately 10 per cent, and twelve died of toxemia and sepsis, a mortality of approximately 10.1 per cent. In reviewing our previous series we found that deaths from burns under treatment by trinitrophenol and dry air were approximately 40 per cent, and deaths due to débridement resulted in a mortality of 57 per cent. These figures show definitely a decrease in mortality attributable to tannic acid treatment. In children with burns of the extremities, primary attention should be given to the granulating surfaces; if contractures tend to occur, daily gentle manual extension by both physician and nurse is preferable to any retention apparatus. After the skin is reformed, an apparatus or operation may be easily devised to overcome the contractures. In children with extensive

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burns, when there is not much normal skin to take for grafts, pinch grafts can be inserted about 1 cm. from one another and epithelization will occur from each graft, bridging the defect. It is better to attempt small areas at a time, doing repeated small operations. The extremity should be immobilized and dressings so applied that there will be no movement of the grafts, and sufficient pressure must be made to prevent serum accumulation beneath them. On the other hand, the pressure should not be great enough to interfere with the capillary circulation so that the grafts may receive their blood supply. We have found it advisable to excise the scar tissue always near the advancing edge of epithelium, because if grafts are planted in the center of the granulating surface they are gradually choked off by the surrounding exuberant granulating tissues. If infection occurs, the eschar should be debrided and the underlying cellulitis treated. Acriflavine, 1:5,000, applied as a wet dressing tends to diminish infection and apparently aids the epithelization. In deep third degree burns it is advisable to apply skin grafts soon after the sloughs separate. When granulating areas have been infected and there has been a delay before grafting is attempted, it is advisable to excise the scar tissue down to the underlying fascia.

Gastrectomy

DRS. J. M. T. FINNEY and W. F. RIENHOFF, Baltimore: This paper is based on five cases of complete gastrectomy of our own and 117 additional cases collected from the literature. Credit is given to John Jones, first professor of surgery in King's College Medical School, New York, as the first one to conceive the idea of resection operations on the stomach. The operation of gastrectomy is an American operation, since it was first performed in 1884 by Conner of Cincinnati. A study of the recorded cases would justify their division into two classes—sixty-six undoubted cases of total gastrectomy and fifty-six in which less than 3 cm. of stomach had been left. In the former group there were 46.2 per cent recovery; in the latter group, 75 per cent. From our study of this series of 112 cases it must be concluded that the stomach does not appear to be absolutely necessary for the life or well being of the patient, since its functions seem to be taken up and carried on fairly well vicariously. A practical lesson to be drawn from these observations is that the preservation of some mucous membrane, even ever so little, if it can be done without leaving cancer, is advantageous, but the patient has at least an even chance if the entire stomach is removed.

Treatment of Cancer of the Cervix Uteri

DR. CHARLES R. ROBINS, Richmond, Va.: The following was adopted as technic for the favorable cases: The patient is sent to the radiologist for a series of deep roentgen-ray treatments that are given as if they are intended to be curative. After these are completed, the operative treatment is instituted. A total abdominal panhysterectomy is done, as wide an excision as possible being made but a Wertheim not being attempted. After the patient has recovered from the operation sufficiently to move about, she reports again to the radiologist, who gives another series of deep roentgen-ray treatments. It appears that the prospect of securing a higher percentage of cures by this combined method might be reasonable.

Nonparasitic Solitary Cyst of Liver

DR. ALEXIUS MCGLANNAN, Baltimore: A woman, aged 30, was admitted to the hospital with a diagnosis of chronic cholecystitis. For more than a year she had suffered from recurrent attacks of pain in the upper right quadrant of the abdomen. The pain radiated to the back and to the right shoulder. With each attack there was vomiting, and more or less indigestion was present between them. There was no history of jaundice. Since the last attack, ten days before admission, an indefinite but apparently smooth rounded mass could be felt at the margin of the liver and was assumed to be a distended gallbladder. This area was tender and there was some muscle spasm present. At operation we found a cystic tumor growing from the lower surface of the liver and extending a short distance beyond its anterior margin. There were no evidences of disease of the bile tract. Aspiration drew out about 24 ounces (700 cc.) of clear, straw-colored fluid, which did not stain the gauze packs. A section of the cyst wall showed fibrous tissue containing many large new blood vessels, a certain number of bile ducts and an area of liver cells entirely surrounded by fibrous tissue, and did not appear to connect with any of the ducts.

Pott's Fracture with Persistent Posterior Dislocation of Astragalus

DR. JOHN C. A. GERSTER, New York: A recent case in a stout, plethoric, middle-aged, alcoholic man presented such an extensive echymosis and swelling of the ankle and leg that any operative intervention would have been fraught with the gravest danger to both limb and life. Two attempts at reduction and plaster of paris immobilization under general anesthesia having failed, simple maintenance of the foot in elevation was found to produce entirely effective reduction, the weight of the leg being sufficient to carry the lower end of the tibia backward into its normal position. Active flexion and extension of the ankle were practiced almost from the first. Hypertension of the knee was prevented by a suitably adjusted support.

Treatment for Fracture of the Hip

DR. GEORGE A. HENDON, Louisville, Ky.: Any fracture of any long bone in the body can be locked surely and safely by beef bone keys, and union will result promptly without the use of any other immobilizing splint or apparatus. I have employed the keys in this manner in compound fractures, gunshot fractures, simple, transverse and oblique fractures; in nonunion, vicious union, delayed union, and in the humerus when the upper third of the shaft had melted away and the head had been reduced to a shell following fracture of the surgical neck, and secured for the patient a useful arm by driving the bone key into the lower fragment and allowing the projecting end to be of sufficient length to rest against the glenoid cavity. I have used the key in nine fractures of the hip. In one case the patient was a woman in the last stages of uterine cancer and her hip was broken when she was being lifted on a bed pan. The other eight cases involved: six intracapsular fractures in persons the youngest of whom was 68 (an epileptic) and the oldest 79, and two cases of nonunion of fracture of the neck of the femur in boys, aged 12 and 16, respectively. I always close the operative wound with silkworm-gut or silver wire, using no catgut at all and carrying my suture to the bone, thus closing the tissues *en masse*. So far I have never found it necessary to ligate a vessel. The sutures are placed at sufficient depth and proximity to insure closure of all dead spaces and the perfect control of hemorrhage. The patient is then placed in bed with a sand bag along the outer aspect of the leg to resist the tendency to external rotation and eversion of the foot. The patient can be moved about in bed without fear of refracture because a three-eighths inch pin is stronger than the neck of the bone in old persons. No restraint is necessary. They can be allowed out of bed as soon as the wound in the soft tissues has healed. The only fracture so far found to contraindicate this method is a pathologic fracture. My experience proves beyond any doubt that these keys do not act as foreign bodies or become sequestrums even in the presence of suppuration. In preparing the keys we boil them thirty minutes before the operation and float them in a 4 per cent solution of phenol (carbolic acid) immediately before being used. They can be kept on hand and sterilized over and over.

Treatment of Fractures

DR. E. DUNBAR NEWELL, Chattanooga, Tenn.: Observation of our personal cases indicates that nonunion following fracture is very rare. Firm bony union seems to develop in less time following a comminuted fracture than it does in a simple, transverse or oblique fracture. Compounded fractures, when the blood supply has not been seriously impaired and the soft parts not gravely mutilated, unite as quickly as simple fractures. Absolute prolonged immobilization of frac-

tured ends not only is nonessential to normal osteogenesis, but retards the normal healing process in fractured bones and the functional activity of the limb. Early reduction means easy reduction; early massage and manipulation mean quick restoration and normal function.

Treatment of Ununited Fracture

DR. ROBERT CAROTHERS, Cincinnati: In January, 1916, a man, aged 41, sustained a fracture of two ribs, the lower end of the left humerus and the left tibia and fibula. With considerable difficulty I secured union of the ribs and the tibia and fibula. Not so with the humerus. He then passed from under my care. Some time during the summer of 1916 he was operated on elsewhere, unsuccessfully. The humerus was wired. Five years later he was operated on again without success. Bone grafting was the method at this time used. Last May he returned to me with no union and a definite false joint. I exposed the fracture, the false joint was destroyed, and the fractured ends were freshened and plated. A plaster-of-paris shoulder splint was applied including the entire arm and hand. At the end of eight weeks the dressings were removed and good union had been secured. One-half ounce (15 cc.) of cod liver oil and 1/20 grain (3 mg.) of parathyroid, with 2 grains (0.13 Gm.) of calcium lactate, three times a day, was administered. Three months later, while working about his garden, he again broke his arm at the seat of the old fracture. Treatment was again instituted as before and union was again secured.

Tissue Diagnosis in Operating Room

DR. JOSEPH C. BLOODGOOD, Baltimore: Tissue diagnosis in the operating room, to be effective, must become a routine daily procedure during the operation, in or very near the operating room. The rapidly frozen sections are not only essential for immediate microscopic diagnosis and study, but allow grading of malignant growths and checking of proper areas to be removed. There is no better method for the pathologic study of all tissues than the unfixed, rapidly stained section. With immediate microscopic check, incomplete removal of the local lesions of all types will be under control, which is very important.

Calculus of the Upper Urinary Tract

DR. GUY L. HUNNER, Baltimore: Since drainage methods were made use of, 302 cases have been studied, 155 of nephrolithiasis and 147 of ureterolithiasis. By strict methods of exclusion, and reckoning only those patients studied one year or longer after their final treatment, statistics are available in only seventy-eight cases, thirty-three of nephrolithiasis and forty-five of ureterolithiasis. The end-result study, showing a recurrence of 9.5 per cent in the nephrolithiasis cases treated by drainage methods and conservative operation, was based on roentgenographic examination, and in the ureterolithiasis cases with a recurrence of 4.4 per cent, the final study was made by means of roentgenography, the wax-tipped catheter test, or both methods. Those who are using the drainage methods know that such statistics tell only a small part of the story. In some patients, whom our preliminary studies have put down as unfit for operation, the phenolsulphonphthalein output and increase in general well being after the preliminary ureteral drainage enabled us to operate with success. In other patients with some constitutional defect or advanced age, for whom a radical operation is out of the question, we can do much for the amelioration of symptoms and prolongation of life by simply establishing better ureteral drainage. In pregnant women with renal lithiasis, immediate operation with its attendant dangers is not necessary, provided good drainage can be established. In the case of a patient with important business or professional engagements who is suddenly prostrated by renal colic, found on investigation to be associated with stone formation in the upper tract, we have heretofore considered an immediate operation the only wise course, regardless of how inopportune such hasty action might be to the patient. We can now give such patients good ureteral drainage and allow them to select their own time for the operation. With an impacted ureteral stone threatening the integrity of a kidney immediate surgical intervention is sometimes necessary, but in most instances we can pass a catheter beyond the stone and leave it in for permanent drainage until the patient is in better condition for operation, or for an attempt to get the stone to pass after more complete dilation.

A New Type of Permanent Colostomy

DRS. CHARLES H. MAYO and CLAUDE F. DIXON, Rochester, Minn.: A posterior, uncontrolled outlet to the large bowel, a real return to diaper life, is usually a most serious, unnecessary and avoidable procedure. It is possibly less troublesome if the sigmoid fecal reservoir has not been disturbed. Such openings should be in sight on the abdomen, so placed and constructed that a belt may control the outlet without the use of cumbersome apparatus or the added burden of frequent cleansing. Several types of colostomy have been planned for control of the outlet; the principle, therefore, is not new. The incision, 10 cm. long, is oblique and in line with the external oblique muscle two-thirds below and one-third above the iliac crest and 4 cm. mesial to the left anterior superior iliac spine. The incision goes through the external oblique, which is spread, and the internal oblique, which is opened in the center of the incision by separation of its fibers. The peritoneum is incised, the hand inserted and the abdomen explored, the liver, spleen, large bowel, lymph nodes and pelvis being examined. If the colonic stoma is to be temporary, plans are made at this time for resection of the tumor at a second operation. If the operation is to be a Kraske, a permanent stoma is made. If metastasis has occurred in the abdomen, lymph nodes and liver, colostomy alone is advisable. Radium can be applied within the bowel for the growth, and roentgen rays used over the abdomen. Permanent colostomy is carried out by again splitting the fibers of the internal oblique about 2 cm. below the previous opening in it to make a muscle flap. This segment of muscle and peritoneum is now drawn through an opening made in the mesentery of the loop of descending colon after its withdrawal from the abdomen. Two slight cuts are made, one on each side of the center of the opening in the external oblique at right angles to the line of the original incision. The two flaps thus formed are overlapped through the opening in the mesentery and sutured to help strengthen the abdominal wall about the bowel at the points of emergence and entrance. A skin flap 3 cm. in width and 6 cm. in length is lifted at right angles to the original skin incision and on the mesial side at the upper end. This skin flap is drawn through the opening in the mesentery, returned to its original position and sutured, the bowel being displaced mesially. For the first few days gases readily pass through the loop and out by rectum. The loop is not punctured with the cautery for from two to four days. To prevent the bowel from making undue pressure on the skin flap, a wooden tongue depressor is passed through the mesenteric opening. In one week the bowel is cut through, 1 cm. being left projecting above the skin at each opening. The two openings will now be at least 5 cm. apart. The lower opening is direct and soon reduces as it is merely an exit for mucus. The upper opening is a true sigmoid passing directly downward to the aponeurosis of the external oblique under the skin flap and then turning at right angles to enter the abdomen through the external and internal oblique. It is easily controlled by a bit of gauze covered by toilet paper and a flat rubber pad fixed over this by a belt or binder. The bowels are trained to move once or twice a day at regular periods.

Treatment of Pruritus Ani, Pruritus Vulvae and Rectal Prolapse by Hypodermic Injections of Hydrochloric Acid

DR. GRANVILLE S. HANES, Louisville, Ky.: Pruritus can be cured by injecting dilute hydrochloric acid, 1:3,000, into these rarefied areas and potential cavities. It must always be preceded by a local anesthetic. I use procaine hydrochloride, a 0.5 per cent solution, made from chemically pure hydrochloric acid. Pruritus vulvae can be treated with hydrochloric acid as successfully as pruritus ani. The teeth, gums, tonsils, digestion and every source of disturbance in the digestive system must be corrected before pruritus ani and vulvae can be cured permanently.

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Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

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*Apical Heart Murmurs. P. D. White, Boston.—p. 731.
*Whooping Cough Treated with Ephedrine Hydrochloride. W. D. Anderson and C. E. Homan, Jr., Chattanooga, Tenn.—p. 738.
*Chloride Metabolism in Lobar Pneumonia. R. L. Haden, Kansas City, Mo.—p. 744.
*Preexisting Syphilis as Cause of Unresolved Pneumonia and Factor in Production of Postpneumonic Complications. J. B. Youmans and R. H. Kampmeier, Ann Arbor, Mich.—p. 750.
Therapeutic Use of Digitalis. C. C. Wolferth, Philadelphia.—p. 760.
*Comparative Value of Tests of Renal Function in Nephritis. B. D. Bowen, Buffalo.—p. 769.
*Origin of "B" Bile Obtained by Lyon's Method of Biliary Drainage. M. Lake, New York.—p. 786.
*Icterus Neonatorum Gravis. H. M. Greenwald and W. Messer, New York.—p. 793.
*Tenderness of Sternum in Leukemia. L. F. Craver, New York.—p. 799.
*Gas Gangrene in Civil Practice. M. Weintrob and C. R. Messeloff, New York.—p. 801.
Stovarsol (Spirocid) Poisoning: Six Cases. W. L. Bender, San Francisco.—p. 819.
Acute and Recurrent Pseudo-Appendicitis Due to Intercostal Neuralgia. J. B. Carnett, Philadelphia.—p. 833.

Analysis of Apical Heart Murmurs.—An analysis made by White of 1,050 unselected patients with apical systolic murmurs, seeking medical advice because of cardiac symptoms or signs, has shown that organic heart disease was present in 797, or 76 per cent. Of this number in fifty cases, the murmur was transmitted from the base. Sixty-three cases were doubtful, and in only 190 (or 18 per cent) was the heart apparently not the site of structural disease. The louder the murmur, the greater is the probability of organic heart disease and the worse the prognosis. Valvular disease, cardiac dilatation, or both, appear to be responsible for the bulk of apical systolic murmurs in this group. An analysis of 250 consecutive patients with mitral diastolic murmurs has shown that true mitral stenosis is probably present in about 90 per cent, the balance being due to left ventricular dilatation associated with aortic regurgitation (Austin Flint murmur) or other conditions. Transmission of aortic diastolic murmurs to the apex occurs in about 37 per cent of the cases showing such murmurs. Organic heart disease (including angina pectoris) is frequently found without apical systolic or diastolic murmurs, as shown by 492 (or 36 per cent) of the present series of 1,359 cases of organic heart disease, and also quite often without heart murmurs at all, as shown by 421 (or 31 per cent) of these same 1,359 cases. The organic cases in which heart murmurs are absent are as important prognostically as those in which murmurs are present.

Whooping Cough Treated with Ephedrine Hydrochloride.—Anderson and Homan report twenty cases of whooping cough that were treated with ephedrine hydrochloride. The drug was given by mouth in a watery solution. One-fourth grain (16 mg.) was given to children over 1 year of age, and one-eighth grain (8 mg.) to those younger. In six cases, medication was given at bedtime only; in the remaining cases ephedrine was given night and morning and occasionally three times a day. No other medication was used during the administration of ephedrine. Relief from spasmodic cough and vomiting was obtained in eighteen cases. In all cases in which improvement was noted, some cough remained but it was mild and of a type associated with acute upper respiratory infection, none of the characteristic signs of whooping cough remaining. No serious toxic symptoms were noted, and complications did not occur in these cases. The authors feel that the drug is most useful during the second stage and that smaller doses would give relief without toxic symptoms developing. Six of nine well children whose blood pressure was noted after the administration of ephedrine, showed a slight rise.

Chloride Metabolism in Lobar Pneumonia.—Haden presents the results of chemical analyses of the blood in five cases of lobar pneumonia. The blood shows almost constantly a low chloride content. Often the urea nitrogen and nonprotein nitrogen are high. The carbon dioxide combining power is seldom below normal. The urine shows very little chloride and usually a high nitrogen content. The use of sodium chloride in the cases here reported seemingly had a marked therapeutic effect in patients suffering from lobar pneumonia. The dose varied considerably from 4 to 36 Gm. daily. Usually the salt was given in uncoated tablets by mouth. In extreme cases it should be given intravenously as a 1 or 2 per cent solution, preferably dissolved in 10 per cent dextrose solution. When given by mouth, 1 or 2 grains (0.065 to 0.130 Gm.) should be given every hour until the sodium chloride concentration of the urine is normal.

Relation of Syphilis to Unresolved Pneumonia and Postpneumonic Complications.—The records of thirty patients with postpneumonic complications (unresolved pneumonia, fibroid pneumonia, pulmonary abscess and bronchiectasis) were reviewed by Youmans and Kampmeier. In ten instances the patients are living, and in twenty the condition was discovered or confirmed at necropsy. Of the ten living patients six showed definite evidence of syphilis and two were possibly syphilitic. Of the twenty patients examined at necropsy, six showed the presence of syphilis and four may have had syphilis. Thus, of the total of thirty cases of such postpneumonic complications at least twelve, or 40 per cent, occurred in association with preexisting syphilis. Preexisting syphilis is apparently an important and frequent cause of nonresolution of pneumonia and of associated postpneumonic pulmonary complications.

Value of Renal Function Tests in Nephritis.—The observations made by Bowen appear to uphold the views of MacLean in regard to the urea concentration test; that is, any concentration of urea in the urine (second hour) that is below 2 per cent may be regarded as evidence of kidney insufficiency, and if the concentration exceeds 2.5 per cent, renal function is fairly efficient. If it is inconvenient to make blood urea determinations, a satisfactory estimation of renal function may be made by a study of the day-night urine volume ratio and the urea concentration test (MacLean). The determination of the blood uric acid appeared to be without value as a renal function test.

Origin of "B" Bile.—The recovery through a duodenal tube of 1 ounce (30 cc.) or more of brownish, dark greenish or black bile following the instillation of magnesium sulphate or olive oil, Lake says, is accompanied by a considerable decrease in the size of the gallbladder shadow by roentgen ray or (in one case) its disappearance. The dark bile so obtained contains an average of forty-eight times as much iodine as the bile that precedes it and 10.8 times as much as the bile that follows it, and may be the only fraction containing any iodine (fourteen hours after the oral administration of sodium tetraiodophenolphthalein). When dark bile is not recovered, even though large amounts of yellow bile appear, the gallbladder shadow is either absent or does not decrease in size. When a smaller amount of dark bile or a larger amount of amber-colored bile is secured, the gallbladder shadow decreases slightly in size or (in one case) not at all.

Familial Icterus Neonatorum Gravis.—A case of familial icterus neonatorum gravis with recovery is reported by Greenwald and Messer, the first two infants of the same mother having suffered from this disease with fatal termination. Symptoms pointing to an involvement of the central nervous system, as evidenced by spastic diplegia and idiocy, developed subsequently.

Tenderness of Sternum in Leukemia.—Craver stresses the clinical importance of the pressure of sternal tenderness in leukemia. This sign is present more often than is tenderness over other bones. It is seldom present over the entire sternum, being almost always limited to the gladiolus. The

tender area may be so small that it may be missed completely, and in such instances it is almost invariably found at one definite point. This point is in the midline opposite the fifth costal cartilage. The tender area may not be larger than the tip of one's finger, and several cases have been seen in which moderate pressure at this point, and no other, will cause severe pain. After treatment of the spleen with radium (without any radiation over the sternum), one will often find, along with the improvement in the general condition and in the blood picture and the shrinkage of the spleen, that the degree of tenderness has become much less, and the width of the tender area much smaller, so that it might be overlooked if one did not locate the definite point mentioned above. With further remission in the disease, the tenderness may completely disappear. The author believes that at least 75 per cent of cases of myelogenous leukemia will show this sign at some time during the course of the disease. It was present in seventeen of eighteen cases reported. Tibial tenderness was found in only two of the eighteen cases, and in both of these it was of slight degree, while the sternal tenderness was pronounced.

Gas Gangrene in Civil Practice.—Eighty-five cases of gas gangrene in civil practice are reported by Weintrob and Messeloff in which *Bacillus welchii* was the predominating organism. The mortality in the total series was 45.9 per cent. In forty cases in the extremities, the mortality was 50 per cent. Briefly, the treatment is as follows: Operate early; use gas-oxygen anesthesia or, if possible, spinal anesthesia; make long longitudinal incisions between and not through normal muscles; excise injured tissue until muscle that is firm, contractile and of normal color, and that bleeds easily is encountered; leave wounds wide open, and irrigate with surgical solution of chlorinated soda.

American J. Roentgenol. & Rad. Therapy, New York

18: 501-608 (Dec.) 1927

Malignant Tumors of Thyroid Treated by Operation, Radium and Roentgen Rays. H. H. Bowing, Rochester, Minn.—p. 501.
Clinical Evidence of Thyrotoxic Control After Radium Therapy. R. E. Loucks, Detroit.—p. 509.
*Five-Year End-Results of Radium Treatment in Carcinoma of Cervix Uteri. L. A. Pomeroy, Cleveland.—p. 514.
*Effect of Roentgen-Ray Irradiation on Velocity of Erytarocyte Sedimentation. E. H. Rubin and O. Glasser, New York.—p. 520.
Inactivation of Trypsin by Roentgen Rays of Different Hardness. K. Rothstein, Cleveland.—p. 528.
*Roentgenologic Aspect of Intussusception. H. E. Ashbury, Baltimore.—p. 536.
Cystography as Aid to Diagnosis of Pelvic Lesions in Female. S. A. Robins, Boston.—p. 546.
Abdominal Aneurysm: Three Cases. H. L. Farmer, Cleveland.—p. 550.
*Cholecystography by Oral Administration of Sodium Tetraiodophenolphthalein in Solution. L. Levyn and A. H. Aaron, Buffalo.—p. 557.
Pneumatic Rupture of Intestine: Roentgen-Ray Studies Following Recovery. R. B. Morris, Olean, N. Y.—p. 560.
Advantages of Roentgenologic Chest Survey Applied to Recruits and Overseas Replacements of U. S. Army. C. L. Maxwell, Honolulu.—p. 562.

Results of Radium Treatment of Cancer of Cervix.—In a series of 227 patients with carcinoma of the cervix applying for radium treatment, twenty-nine, in whom carcinoma was microscopically demonstrated, have been observed by Pomeroy five years or more. Of these twenty-nine patients, representing all grades of severity, five, or 17.24 per cent, are apparently well. Tumors classified as adenocarcinoma of the cervix constitute more than half of these apparently arrested cases.

Effect of Roentgen Ray on Erythrocyte Sedimentation.—Rubin and Glasser assert that any increase in the velocity of erythrocyte sedimentation as a result of irradiation is due to increased temperature and is probably caused by changes in the plasma rather than in the cells.

Roentgenologic Aspect of Intussusception.—Ashbury says that roentgen-ray examination by opaque enema is, as a rule, the quickest and safest method of locating the point of obstruction in intussusception, as it frequently visualizes the invagination; that the information gained is of the greatest value, and that its use does not materially delay operation.

Cholecystography.—The oral administration of tetraiodophenolphthalein is recommended by Levyn and Aaron. In order that it may be evenly distributed for absorption, they make a mixture with grape juice. The disodium tetraiodophenolphthalein, 3 Gm., is dissolved in 1 ounce (30 cc.) of water, care being taken to guard against any lumping by filtering the solution. To this is added from 8 to 10 ounces (235 to 300 cc.) of a standard grape juice which precipitates the free acid in a very finely divided fresh state. The resulting mixture is most palatable and very well relished. The finely divided free acid is readily converted into the soluble salt by the duodenum and excellent cholecystograms are obtained. In order to eliminate the time-consuming factor in preparing the dye in this manner, and to obviate any difficulties patients might encounter when given the dye to prepare themselves, the authors make a watery solution of the disodium salt of tetraiodephenolphthalein to which is added sufficient malic acid to combine exactly with one half of the sodium present. It is presumed that this treatment breaks up the unstable disodium salt into the stable monosodium salt and sodium malate, thereby preventing decomposition. Before administering this suspension, it is necessary entirely to convert the monosodium salt into a freshly precipitated free acid which will pass into the duodenum in a finely divided and active state. This is accomplished by merely adding from 8 to 10 ounces of grape juice. The tartaric acid in the grape juice is more than sufficient entirely to convert the monosodium salt to the free acid.

Archives of Otolaryngology, Chicago

6: 503-596 (Dec.) 1927

*Retrobulbar Neuritis and Infection of Accessory Nasal Sinuses. K. S. Oliver and S. J. Crowe, Baltimore.—p. 503.
*Infantile Mastoiditis with Gastro-Intestinal Symptoms. H. W. Lyman, St. Louis.—p. 526.
*Value of Oxygen Following Bronchoscopy in Children. H. J. Moersch and W. M. Boothby, Rochester, Minn.—p. 542.
Relationship Between Mucoceles and Cysts: Cyst of Maxillary Sinus. A. Lobell, New York.—p. 546.
*Use of Cartilage and Ivory in Plastic Surgery of Nose. S. Salinger, Chicago.—p. 532.
Acute Fulminating Osteomyelitis of Frontal Sinus: Hematogenous (?) Origin (Dental Focus). H. Hastings, Los Angles.—p. 559.
Tonsil Problem: Working Hypothesis for General Guidance. E. R. Roberts, Bridgeport, Conn.—p. 565.
Sarcoma of Mastoid. F. B. White, Stamford, Conn.—p. 569.
Two Instruments for Resection of Antrum Windows. G. E. Hourn, St. Louis.—p. 572.
Tuberculosis of Upper Respiratory Tract. G. B. Wood, Philadelphia.—p. 573.

Retrobulbar Neuritis Caused by Infection in Accessory Nasal Sinuses.—Oliver and Crowe report ten cases of a retrobulbar neuritis that apparently developed as a result of infection in the accessory nasal sinuses. In each of these cases, however, the patient was admitted to the hospital and was subjected to a thorough diagnostic study in order to eliminate the other common causes of retrobulbar neuritis, and to search for foci of infection in the teeth, tonsils, genito-urinary tract, appendix, gallbladder and large intestine.

Infantile Mastoiditis with Gastro-Intestinal Symptoms.—Personal observations, together with the reports of other investigators in various parts of the country, convince Lyman more firmly than ever that a focus of infection in the ear may be responsible for diarrhea, vomiting and loss of weight in infants, and that the treatment in such cases requires prompt otologic surgery.

Value of Oxygen Inhalation Following Bronchoscopy.—In view of their experience with three patients, Moersch and Boothby believe that it would be well to place all children in the oxygen chamber immediately after bronchoscopy, in order to decrease the labored breathing, to reduce cyanosis, to prevent edema as much as possible, not only of the larynx but also of the respiratory membrane, and to reduce the possibilities of the occurrence of bronchopneumonia by keeping the patient in the best possible condition to prevent its development. Oxygen should be used, especially if laryngeal edema is marked and if pneumonia has developed, as it puts the patient in a better condition to overcome injury. If an oxygen chamber is not available, oxygen might be given through a portable oxygen tent or through a catheter, although the latter methods are usually inefficient and hard to carry out if the child is restless.

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Use of Cartilage and Ivory Transplants for Repair of Nose.—Salinger favors ivory over cartilage for the repair of saddlenoses, or flat tips, because it is easier for the patient, there is less chance of infection, and the ivory will not be affected by the host. At the present time, implants inserted more than a year ago are securely in place; the surrounding tissues do not show any sign of ejecting the strange body, and the cosmetic results are ideal.

Archives of Path. & Laboratory Medicine, Chicago

4: 871-1089 (Dec.) 1927

*Histologic Atlas of Gliomas. P. Bailey, Boston.—p. 871.
*Heart in Syphilitic Aortitis. B. J. Clawson and E. T. Bell, Minneapolis. —p. 922.
Periaortic Fat Bodies. D. J. Davis, Chicago.—p. 937.
*Sphincter of Choledochus. A. S. Giordano and F. C. Mann, Rochester, Minn.—p. 943.
Reticulo-Endothelial System: III. Influence of Hormones. M. A. Goldzieher and L. Hirschhorn, New York.—p. 958.
*Anomalous Congenital Bicuspid Subaortic Valve of Heart. N. Enzer, Chicago.—p. 966.
Origin of Pulmonary Plugs in Suprarenalectomized Rats. H. S. Thatcher and B. L. Robinson, Little Rock, Ark.—p. 974.
Carbon Disulphide-Paraffin Method of Embedding Tissues and Staining by Hematoxylin and Eosin. W. H. Feldman, Rochester, Minn.—p. 979.
Quantitative Relation of Serum Albumin and Globulin. B. R. Lovett, Chicago.—p. 984.

Atlas of Glioma.—In answer to a demand for illustrations of specimens of the different types of gliomas made from preparations stained with the ordinary methods used in pathologic laboratories, Bailey has prepared an atlas consisting of twenty-five plates, each illustrating a type of glioma.

Heart in Syphilitic Aortitis.—Among 4,577 necropsies performed on the bodies of persons over 20 years of age who died from other causes, Clawson and Bell found 126 cases of syphilitic aortitis, an incidence of 2.6 per cent. With proper correction, the ratio is about two men to one woman. The 126 cases of syphilitic aortitis are classified on the basis of the clinical courses and the pathologic conditions found at necropsy as follows: (1) aortic insufficiency: forty-six cases, 36.5 per cent; (2) sudden death from closure of coronary orifices: twenty-five cases, 19.9 per cent; (3) rupture of aortic aneurysm: thirty-five cases, 27.7 per cent; (4) gummas of the myocardium: three cases, 2.4 per cent; (5) miscellaneous (death from other causes): seventeen cases, 13.5 per cent.

Sphincter of Choledochus.—Evidence of the presence of a sphincteric mechanism at the duodenal end of the common bile duct is presented by Giordano and Mann. Certain specimens examined at necropsy suggest the possibility that the sphincteric mechanism can be thrown into spasm by pathologic conditions in the gastro-intestinal tract and adjacent organs. The cause of some cases of jaundice and also of pancreatitis might be explained on the basis of spasm of this sphincteric mechanism producing obstructions to the outflow from both liver and pancreas.

Anomalous Bicuspid Valve.—An anomalous bicuspid valve in the left ventricle is described by Enzer. In position it resembled a subaortic stenosis. Clinically, it gave rise to a loud systolic murmur and thrill most prominent at the apex. It caused some obstruction to the outflow of blood, leading to hypertrophy of the left ventricle. In structure it closely resembled the mitral valve. The possible embryogenetic origins of the lesion are discussed. In addition to this anomaly there was a misplacement of the ostium of the left coronary artery and a localized hypoplasia or coarctation of the arch of the aorta.

Archives of Physical Therapy, X-Ray, Radium, Omaha

8: 611-658 (Dec.) 1927

Will Supersoft Roentgen Rays (1.5 to 2 A. U.) Replace Roentgen Rays (0.177 to 0.30 A. U.) Ordinarily Used in Treatment of Skin Diseases? J. J. Eller and N. P. Anderson, New York.—p. 611.
Rôle of Roentgenology in Diseases of Chest. P. R. Casellas, El Paso, Texas.—p. 615.
Treatment of Cancer of Cervix. C. O. Donaldson, Kansas City, Mo. —p. 621.
Physical Therapy of Stomach. A. J. Riviere, Paris.—p. 625.
Radiation Therapy at Bellevue Hospital. I. L. Kaplan, New York. —p. 630.
Indications for Electrotherapy. J. E. G. Waddington, Detroit.—p. 647.

Association American M. Colleges Bulletin, Chicago

3: 1-96 (Jan.) 1928

Teaching Anatomy in University of Manitoba. J. C. B. Grant, Winnipeg, Man.—p. 1.
Place of Living Anatomy in Medical School. E. J. Carey, Milwaukee. —p. 10.
Extramural Clinical Teaching: I. Preceptor System at Wisconsin. C. R. Bardeen, Madison, Wis.—p. 31.
Id.: II. Preceptor System at Michigan. H. Cabot, Ann Arbor, Mich.—p. 37.
Id.: III. Modification of Preceptor System. L. S. Schmitt, San Francisco.—p. 39.
Id.: Clinical Clerk System at Northwestern University Medical School. F. C. Zapffe, Chicago.—p. 41.
Coordination of Medical Problems: Medical Education: Public Health and Hospitals in Republic of Haiti. C. S. Butler, Washington, D. C. —p. 46.
Teaching Therapeutics. G. Giddings, Atlanta, Ga.—p. 58.

Atlantic Medical Journal, Harrisburg, Pa.

31: 141-218 (Dec.) 1927

*Liver Extract in Toxemias of Pregnancy. H. A. Miller and D. B. Martinez, Pittsburgh.—p. 141.
*Pernicious Anemia: Relation to Infection. F. A. Evans, Pittsburgh.—p. 147.
*Id.: Treatment with Liver. W. J. Fetter, Pittsburgh.—p. 150.
Tuberculosis of Skin: Classification. F. B. Miller, Pittsburgh.—p. 157.
Id.: Diagnosis. P. Hart-Drant, Philadelphia.—p. 159.
Id.: Treatment. F. M. Jacob, Pittsburgh.—p. 165.
Survey of Semiblind School Children in Philadelphia. S. W. Newmayer, Philadelphia.—p. 168.
Certain Difficulties Attendant on Regional Anesthesia. J. S. Lundy, Rochester, Minn.—p. 176.
Prolapse of Urethra in Girls. H. R. Loux, Philadelphia.—p. 181.
Primary Carcinoma of Bulb. D. P. McCune, McKeesport, Pa.—p. 182.
Ruptured Kidney Due to Muscular Action. O. E. Fox, Reading, Pa. —p. 183.
Complete Retention Due to Hypertrophied Prostate and Complicated by Stricture. J. Appleyard, Lancaster, Pa.—p. 184.

Liver Extract in Toxemias of Pregnancy.—According to Miller and Martinez, convulsions have never developed in a preeclamptic woman following a liver diet, even though the condition may have been complicated by a preconceptional nephritis; in fourteen consecutive cases of eclampsia recovery ensued. For every case there seems to be a neutralizing dose that relieves all symptoms, except that in the nephritic cases the blood pressure remains at the level consistent with the previous pressure. However, convulsions do not occur, and in all cases the pregnancy was allowed to continue. All patients in convulsions when first seen have been treated successfully and intervention avoided.

Relation of Infection to Pernicious Anemia.—Evans insists that pernicious anemia is not an infectious disease. If caused by some type of infection, that infection must be only one of two or more contributing factors.

Liver Diet in Pernicious Anemia.—A diet rich in liver has been very successful in the treatment of thirty-four cases of pernicious anemia. Fetter says that the patients with marked cord degeneration showed little improvement in the neurologic symptoms. However, the symptoms of early cord disturbance were often greatly relieved. Patients having transfusions within a comparatively short time before the beginning of the diet seemed to respond more slowly. It sometimes appears to be of value to combine treatment with iron and liver feeding.

Boston Medical and Surgical Journal

197: 1207-1256 (Dec. 29) 1927

*Desirability of Second Removal of Prostate in Certain Cases of Carcinoma. A. L. Chute, Boston.—p. 1207.
*Auricular Fibrillation in Apparently Normal Heart. W. D. Reid, Boston. —p. 1213.
Convalescence and Boston. J. Bryant, Boston.—p. 1215.
Origin of Word "Anesthesia." A. H. Miller, Providence, R. I.—p. 1218.
*Necropsies for Practitioner. D. O'Hara, Waltham, Mass.—p. 1222.
Modern Conception of Normal Carbohydrate Metabolism. G. H. Tuttle, South Acton, Mass.—p. 1225.

Second Removal of Prostate.—In a comparatively few patients in whom, following an operation for removal of a carcinoma of the prostate, there have been symptoms due to a recurrence of the disease, Chute has done a second removal of such of the obstructing prostate as he could get, by the perineal route, usually with a considerable degree of relief to the patient. In his opinion, this procedure should be con-

sidered in every case in which, following the removal of a carcinoma of the prostate, there is a recurrence of symptoms due to obstruction at the bladder outlet.

Auricular Fibrillation in Apparently Normal Heart.—Reid reports the case of a young man whose heart appeared to be clinically normal save for the presence of auricular fibrillation, which persisted for two years and eight months. Normal rhythm was promptly restored by the administration of quinidine sulphate. There has not been any return of the auricular fibrillation since its disappearance ten months ago.

Necropsies for Practitioner.—O'Hara suggests that the possibility of establishing a pathologic service for private patients be considered by those interested in postgraduate medical instruction.

Florida Medical Association Journal, Jacksonville

14: 263-314 (Dec.) 1927

Chronic Nephritis. S. A. Folsom, Orlando.—p. 263.
Dairying and Its Relation to Preventive Medicine. J. G. DuPuis, Miami. —p. 284.
Congenital Pyloric Stenosis. J. K. Simpson, Jacksonville.—p. 285.
Displacement of Internal Semilunar Cartilage of Knee Joint: Case. D. T. Babcock, Miami.—p. 290.
Tampa's New Municipal Hospital. N. L. Spengler, Tampa.—p. 292.
Empyema with Bronchial Fistula: Fatal Termination. J. A. Beals, Jacksonville.—p. 300.

Georgia Medical Association Journal, Atlanta

16: 401-436 (Dec.) 1927

Injection of Uterus and Fallopian Tubes with Iodized Oil (Lipiodol) as Aid in Diagnosis. E. H. Greene and R. C. Pendergrass, Atlanta.—p. 401.
Sciatica. N. M. Owensby, Atlanta.—p. 407.

Indiana State M. Association Journal, Fort Wayne

20: 451-496 (Dec.) 1927

Treatment of Common Bone Injuries. E. W. Ryerson, Chicago.—p. 451.
Treatment of Hyperthyroidism. C. A. Nafe, Indianapolis.—p. 456.
Roentgen-Ray Therapy. W. D. Gatch, Indianapolis.—p. 462.

Iowa State Medical Society Journal, Des Moines

17: 427-460 (Dec.) 1927

Salt in Medicine. T. G. Orr, Kansas City, Mo.—p. 427.
Head Injuries. N. M. Whitehill, Boone.—p. 430.
Preparation of Patients for Operation. F. K. Burnett, Clarinda.—p. 434.
Preoperative and Postoperative Treatment of Major Surgical Cases. E. B. Howell and F. A. Hecker, Ottumwa.—p. 439.
Observations in Rhinology. W. W. Pearson, Des Moines.—p. 442.
Insulin in Nondiabetics. H. Haumeder, New Hampton.—p. 446.
Anaphylaxis Following Injection of 1,500 Units of Tetanus Antitoxin. G. Braunlich, Davenport.—p. 450.

Journal of Clinical Investigation, Baltimore

5: 1-160 (Dec. 20) 1927

*Relationship of Acute Infections to Glomerular Nephritis. W. T. Longcope, D. P. O'Brien, J. McGuire, O. C. Hansen and E. R. Denny, Baltimore.—p. 7.
*Elliptical and Sickle-Shaped Erythrocytes in Blood of White Persons. J. S. Lawrence, Nashville, Tenn.—p. 31.
*Effect of Insulin, Pituitary Extract and Epinephrine on Blood Sugar Level. H. Blotner and R. Fitz, Boston.—p. 51.
*Chronic Nephritis With and Without Edema. F. D. Murphy, Milwaukee. —p. 63.
Blood-Urine Urea Concentration Ratio in Hypertension. P. Starr and F. Ballard, Chicago.—p. 101.
*Oxygen Saturation of Hemoglobin in Arterial Blood of Exercising Patients. H. E. Himwich and R. O. Loebel, New York.—p. 113.
*Effect of Digitalis on Output of Heart in Normal Man. C. S. Burwell, DeW. Neighbors and E. M. Regen, Nashville, Tenn.—p. 125.
Experimental Anemia in Dogs: Action of Beef Liver and Iron Salts on Hemoglobin Regeneration. H. H. Riecker, Ann Arbor, Mich.—p. 141.

Relationship of Acute Infections to Glomerular Nephritis.—The etiologic relationship of infections to the diffuse form of acute and subacute nephritis was made the subject of study by Longcope et al. The onset of acute or subacute glomerular nephritis in forty patients was preceded or accompanied in 85 per cent by an acute infection such as tonsillitis, sinusitis, bronchopneumonia or scarlatina. Cultures made from the infections in thirty-two cases showed hemolytic streptococci of β type in 68.7 per cent and streptococci of α type in 12.2 per cent. Ten patients among those who could be constantly observed recovered apparently from the attack of acute nephritis. In nine of these, or 90 per cent, the infection and the infecting organism have disappeared. In twelve cases among those that could be constantly observed, the condition progressed to a chronic stage or terminated fatally. In ten of these, or 83.3 per cent, the infection or the infecting organism has persisted. No evidence could be obtained, in this study, to show that the streptococcus caused the glomerular nephritis by actual invasion of the kidney, for cultures of the blood and urine were negative. All the strains of the streptococci tested produced so-called toxic filtrates, often of considerable potency, and it seems possible that such "toxins" liberated by the growth of streptococci and eliminated through the kidney might cause glomerular nephritis in patients rendered highly susceptible in some way to these toxins.

Elliptical and Sickle-Shaped Erythrocytes in Blood.—Sickle-shaped, sausage and filamentous red blood cells have been shown by Lawrence to be present in some, otherwise normal, white adults. A corresponding series of negroes have shown these abnormal cells in approximately the same proportion (about 2 per cent). Most of the blood conditions generally associated with sickle cell anemia have been found in a white woman. The sickling phenomena have been found in certain members of her family. Evidence of sickling of red blood cells has been found in six white adults and in four colored adults suffering with various diseases. The cells of negro patients showed slight evidence of latent sickling and definite phagocytosis of red blood cells by polymorphonuclear neutrophils. The sickle cells in one of the colored patients did not change their shape on being kept at incubator temperature.

Effect of Insulin, Pituitary Extract and Epinephrine on Blood Sugar Level.—In the experiments made by Blotner and Fitz on normal rabbits, insulin caused a fall in the blood sugar concentration followed by a rise to normal. Pituitary extract and epinephrine caused a rise in the blood sugar concentration followed by a fall to normal or below normal. The blood sugar curves obtained with insulin and pituitary extract were almost directly the reverse of one another. Blood sugar curves obtained with epinephrine were not so directly the reverse of those obtained with insulin, and differed from those obtained with pituitary extract in that the resultant hyperglycemia was of longer duration and subsided more gradually. These experiments bear out the views of Burn in regard to the antagonism which exists between extract of the posterior lobe of the pituitary gland and insulin, and offer a possible explanation for the antagonism between pituitary extract and epinephrine noted by Stenström.

Lipoids in Chronic Nephritis.—In thirty-one patients examined by Murphy, fourteen had chronic glomerular nephritis with edema; eleven had chronic glomerular nephritis without edema, while six had hypertensive cardiovascular disease with edema from cardiac failure. Emphasis is laid on the fact that the presence of the doubly refracting lipoids found in renal tubular epithelium and in the urinary sediment is associated with chronic nephritis and edema. Doubly refracting lipoids were rarely found in the urinary sediment of patients with hypertensive cardiovascular disease with edema from cardiac failure. None of the patients having nephritis without edema had doubly refracting lipoids in the urine, and in none were they found in the tubular epithelium at autopsy. A hypercholesterolemia was usually found in the cases of chronic nephritis with edema, while in the cases of chronic nephritis without edema and of hypertensive cardiovascular disease, there was usually a normal cholesterolemia. A chronic diffuse glomerular nephritis was present in all the cases of chronic nephritis described.

Effect of Exercise on Oxygen Saturation of Hemoglobin.—Experiments made by Himwich and Loebel indicate that in ill and debilitated persons during exertion, the volume of oxygen diffusing through the pulmonary membrane is not enough to saturate the hemoglobin of the blood in the lungs. This suggests that the pulmonary mechanism may be a limiting factor in exercise—a factor which explains in part the inability of sick persons to withstand exertion.

Effect of Digitalis on Output of Normal Heart.—In a small series of normal men treated by Burwell et al., the administration of from 1.4 to 2.7 Gm. of digitalis leaf was followed

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by a diminution in the output of the heart per minute and per beat, and in the basal pulse rate. When nausea was produced by digitalis there was a tendency for the cardiac output per minute to return toward the normal level. The pulse rate remained slow at this time, so that the output per beat often increased to above the amount usual for the individual. The substance of nausea was accompanied by a second period of diminished cardiac output.

Journal of Experimental Medicine, Baltimore

47: 1-184 (Jan. 1) 1928

Local Specific Therapy of Experimental Pneumococcal Meningitis: III. Incidental Myelitis, Abscess and Organization of Exudates. F. W. Stewart, New York.—p. 1.
Pathology of Experimental Virus Encephalitis: IV. Recurring Strains of Herpes Virus. S. Flexner, New York.—p. 9.
Id.: V. Herpes Virus Encephalitis in Guinea-Pig. S. Flexner, New York.—p. 23.
*Ultraviolet Rays and Vaccine Virus: I. Reaction of Irradiated Skin to Vaccine Virus. T. M. Rivers, H. Stevens and F. L. Gates, New York.—p. 37.
*Id.: II. Effect of Monochromatic Ultraviolet Rays on Vaccine Virus. T. M. Rivers and F. L. Gates, New York.—p. 45.
Compensatory Hypertrophy of Lung After Unilateral Pneumectomy. T. Addis, San Francisco.—p. 51.
Precipitin Reaction of Antipneumococcus Serums: I. Precipitin Index. H. Sobotka and Friedlander, New York.—p. 57.
Id.: II. Ratio of Precipitin to Protective Antibody. M. Friedlander, H. Sobotka and E. J. Banzhaf, New York.—p. 79.
Antigenic Complex of Streptococcus Hemolyticus: I. Type-Specific Substance in Extracts of Streptococcus Hemolyticus. R. C. Lancefield, New York.—p. 91.
*Changes in Percentage of Calcium and Phosphorus of Blood Following Section of Sympathetic and Vagus Nerves. B. N. Berg, A. F. Hess and E. Sherman, New York.—p. 105.
*Alterations in Calcium Level of Blood Following Section of Spinal Cord. A. F. Hess, B. N. Berg and E. Sherman, New York.—p. 115.
Methods of Isolating Bacteriophage for Bacillus Diphtheriae. J. A. Kolsterman and K. W. Small, New York.—p. 123.
Influence of Heating Immunization Material on Antibody-Invoking Effectiveness of Type-Specific and Species-Specific Antigens of Type II Pneumococcus Cells. E. L. Gaspari, J. Y. Sugg, W. L. Fleming and J. M. Neill, Nashville, Tenn.—p. 131.
Streptococcus Bacteriophage: II. Influence of Lytic Principles on Agglutination of Hemolytic Streptococci. G. Shwartzman, New York.—p. 151.
*Etiology of Oroya Fever: IX. Bacterium Peruvianum, N. Sp., Secondary Invader of Lesions of Verruga Peruana. H. Noguchi, New York.—p. 165.
Precipitable Substances Derived from Bacillus Typhosus and Bacillus Paratyphosus B. J. Furth and K. Landsteiner, New York.—p. 171.

Reaction of Irradiated Skin to Vaccine Virus.—Rivers et al. found that rabbit skin treated for a few minutes with ultraviolet irradiations and then inoculated at once with vaccine virus is less susceptible to the action of the virus than is untreated skin. If twenty-four, forty-eight, or seventy-two hours elapse between the time of irradiation and inoculation, the treated skin appears to be more susceptible than untreated skin. Skin repeatedly exposed to ultraviolet rays is less susceptible to the action of vaccine virus than is nonirradiated skin.

Effect of Ultraviolet Rays on Vaccine Virus.—It was found by Rivers and Gates that the amount of energy required to kill staphylococci at single wavelengths in the active ultraviolet region was approximately the same as that necessary to inactivate vaccine virus.

Effect of Section of Sympathetic and Vagus Nerves on Blood Calcium and Phosphorus.—Berg et al. assert that when a splanchnic nerve or the celiac plexus was severed, a definite fall in serum calcium resulted, the level falling to 6 mg. per hundred cubic centimeters and remaining low for one or two weeks. Tetany, however, did not develop. The inorganic phosphate was slightly altered. On the other hand, when the vagus nerves were severed, the serum calcium rose. The equilibrium of both calcium and phosphorus was rendered less stable by the division of the sympathetic or the parasympathetic nerves.

Effect of Spinal Cord Section on Blood Calcium.—A marked rise and disturbance in equilibrium of the calcium in the blood was brought about by section of the spinal cord in the upper dorsal segment. Hess et al. found that this reaction, however, was not constant.

Etiology of Oroya Fever: Bacterium Peruvianum.—A minute, pleomorphic, motile, gram-negative bacterium has been isolated by Noguchi from two specimens of nodular tissue from human verruga. Since a micro-organism corresponding in character with this one has not previously been described, it is regarded as a new species, and because of its presence in material obtained from Peru, it has been given the name *Bacterium peruvianum.*

Journal of Urology, Baltimore

18: 595-681 (Dec.) 1927

Granulomas in Urinary Tract. W. F. Braasch and M. V. Hurley, Rochester, Minn.—p. 595.
*Centrifugalization as Means of Identifying Tubercle Bacilli in Urine. H. S. Jeck and M. A. Munch, New York.—p. 607.
*Injections of Renal Pelvis: Pyelovenous Backflow. H. H. Gile, New York.—p. 621.
Malignancy in Undescended Abdominal Testis with Torsion. S. J. Pearlman, New York.—p. 637.
*Symptomatic Varicocele. J. Bate, Louisville, Ky.—p. 649.
*Epispadias in Women. W. G. Sexton, Marshfield, Wis.—p. 663.
Foreign Bodies in Urethra: Cases. E. S. Pomeroy, Salt Lake City.—p. 667.
Stricture of Urethra with Calculi in Scrotal Sinuses. J. M. Venable, San Antonio, Texas.—p. 671.

Identifying Tubercle Bacilli by Centrifugalization.—Simple centrifugalization as a means of finding tubercle bacilli in the urine is, in the experience of Jeck and Munch, equal to any established method and better than most of them. It would therefore seem to be the most satisfactory method for the urologist who does his own laboratory work, or who has it done under his own supervision.

Pyelovenous Backflow.—The term "pyelovenous backflow," if understood in the general sense to mean that substances may go from the renal pelvis to the venous circulation, is a good one, Gile says. It is probable that this phenomenon does not occur by way of the tubules. The exact route by which it does occur has not yet been demonstrated.

Symptomatic Varicocele.—Fourteen cases of symptomatic varicocele were found recorded by Bate among a total of 122 cases in which the clinical diagnosis was malignant tumor of the kidney. Of these 122 cases, fifty-two were not verified by operation or autopsy. Of the fourteen cases of symptomatic varicocele, a microscopic diagnosis of hypernephroma was made in seven, a gross pathologic diagnosis was made at operation in two and a clinical diagnosis, without operation, was made in three. Thus, twelve of the cases were surely or probably hypernephroma. One specimen examined microscopically proved to be a lipoleiomyosarcoma. The other case was diagnosed sarcoma by physical examination only. Sixty-one of the 122 cases were clinically hypernephromas. Twenty-four of these were not completely verified. Thirty-four cases were diagnosed carcinoma of the kidney. There were no cases of varicocele among the cases of carcinoma. Seventeen cases were classed as miscellaneous. Two cases occurred among these, but both were diagnosed clinically as hypernephroma. Of the 122 patients, 11.4 per cent had symptomatic varicocele, while 20 per cent of those with hypernephroma showed it.

Epispadias in Women.—Sexton reports a case of epispadias in a woman, with a marked separation of the labia minora and majora, with rudimentary clitoris, with an intact sphincter and urethra, and with a marked diastasis of the symphysis but not associated with incontinence. Treatment was not attempted.

Maine Medical Association Journal, Portland

18: 221-236 (Dec.) 1927

Epidemiology of Acute Poliomyelitis. W. L. Holt, Portland.—p. 221.

Medical Journal and Record, New York

126: 705-764 (Dec. 21) 1927

Cholecystectomy Without Drainage: Eighty-Six Cases. J. R. Verbrycke, Jr., Washington, D. C.—p. 705.
Blindness of Dental Origin. C. I. Stoloff, New York.—p. 708.
Catarrhal Conjunctivitis: Differentiation from Trachoma and Iritis. E. G. Lear, New York.—p. 710.
Cancer: XXVI. Genesis of Cancer. W. Meyer, New York.—p. 712.
*Effect of Internal Secretions on Sugar Metabolism. W. F. Burge, A. M. Estes, M. Williams and G. C. Wickwire, Urbana, Ill.—p. 716.
Greater Frequency of Filariasis. H. Hausman, New York.—p. 717.
Primary Intrathoracic Neoplasms: Eleven Cases. A. I. Rubenstone and M. Schwartz, Philadelphia.—p. 719.

Stomatology and Orthodontia in Twentieth Century Medicine. C. D'Alise, Naples, Italy.—p. 723.
Radium Emanation Treatment of Cervical Cancer: VI. J. Muir, New York.—p. 725.
Neurotic Factor as It Affects Police Department of City of New York. H. Weinstein, New York.—p. 727.
Ocular Manifestations of Epidemic Encephalitis. G. W. Vandegrift, New York.—p. 729.
Heliotherapy in Treatment of Mental Patients. J. A. Jackson and L. R. Chamberlain, Danville, Pa.—p. 731.
High Cervical Cord Lesions in Guise of Combined System Disease. E. D. Friedman, New York.—p. 734.
Diagnosis of Mental Diseases. J. Smith, New York.—p. 738.
History of Epidemic Encephalitis: III. Described by Caelius Aurelianus. J. Wright, Pleasantville, N. Y.—p. 743.

Effect of Internal Secretions on Sugar Metabolism.—Burge et al. assert that the animal cell paramecium uses all three of the simple sugars, just as do the cells of the higher animals and man. The paramecium uses dextrose and levulose more rapidly than galactose, and dextrose more rapidly than levulose, in this respect again resembling the higher animals. Insulin increases the rate of utilization of all three of the sugars by the paramecium, just as it does in the higher animals. Pituitary extract, like insulin, increases the rate of utilization of the sugars in the paramecium. Epinephrine in small amounts seems to increase slightly, while larger amounts decrease, sugar metabolism in the paramecium.

New York State Journal of Medicine, New York

28: 1-58 (Jan. 1) 1928

Medical Relations. J. D. Olin, Watertown.—p. 1.
Value of Scotometry in Diagnosis and Treatment of Glaucoma. A. H. Thomasson, New York.—p. 4.
Plastic and Reconstructive Procedures in Rhinology. J. W. Malinak, New York.—p. 6.
Salpingitis: Plea for Delayed Operative Intervention. J. V. Ricci, New York.—p. 9.
Morphine and Magnesium Sulphate Infiltrations and Colonic Ether Instillations in Labor. W. B. D. van Auken, Troy.—p. 14.
Supervision of Health of Preschool Child: Relation to Earning Capacity of Wage Earner. H. Chaplin, New York.—p. 20.
Effect of Obscure Mastoiditis on Nutrition in Infancy. S. W. Clausen, Rochester.—p. 23.

Philippine Islands M. Association Journal, Manila

7: 407-452 (Nov.) 1927

Five Cases of Leprosy Treated with Javanin. F. Eubanas, Culion.—p. 407.
Tertiary Manifestations of Yaws in Nose and Throat in Philippine Islands. C. N. Ayuyao, Manila.—p. 411.
Basal Metabolism Among Filipinos. A. B. M. Sison and M. Ignacio, Manila.—p. 416.
Surgical Tuberculosis. E. Ortega and M. Gatmaitan, Manila.—p. 420.
Primary Malignant Tumors of Lung in Philippines. A. G. Sison and C. Monserrat, Manila.—p. 422.

Public Health Journal, Toronto

18: 551-600 (Dec.) 1927

Food Poisoning. E. O. Jordan, Winnipeg, Man.—p. 551.
Protection Against Disease. D. T. Fraser, Toronto.—p. 561.
Social Hygiene Council. G. Bates, Toronto.—p. 565.
Prevention of Rabies Infection. C. M. Anderson, Toronto.—p. 569.
Sunlight and Health. W. H. Hattie, Halifax, N. S.—p. 577.

Public Health Reports, Washington, D. C.

42: 3113-3178 (Dec. 23) 1927

Muscle Training in Treatment of Infantile Paralysis. W. G. Wright. —p. 3113.
May Clonorchiasis Be Disseminated on the Pacific Slope of the United States? N. E. Wayson, Washington, D. C.—p. 3129.

Southern Medical Journal, Birmingham, Ala.

21: 1-86 (Jan.) 1928

Research and Medical Progress. J. S. Horsley, Richmond, Va.—p. 1.
Factors of Safety in Surgery. M. G. Seelig, St. Louis.—p. 6.
Identity of Basic Principle in Pathology and Medicine. C. W. Duval, New Orleans.—p. 10.
Enlarged Spleen. W. J. Mayo, Rochester, Minn.—p. 13.
Health Examinations of Eye. E. Jackson, Denver.—p. 16.
Etiology of Chronic Arthritis. R. L. Cecil, New York.—p. 20.
Crime and Delinquency in Relation to Mental Disorders. B. L. Wyman, Birmingham, Ala.—p. 25.
Evolution of Biliary Tract Radiology. S. Moore, St. Louis.—p. 29.
Joseph Lister. F. K. Boland, Atlanta, Ga.—p. 33.
*Etiology and Pathology of Pemphigus. J. A. Lanford, New Orleans.—p. 35.
Relation of Ophthalmologist to General Medical Profession. C. M. Miller, Richmond, Va.—p. 40.
Are We Dermatologists Syphilologists? J. L. Kirby-Smith, Jacksonville, Fla.—p. 41.
Clinical Teaching of Obstetrics. M. P. Rucker, Richmond, Va.—p. 44.
Evolution of Urology. P. Bromberg, Nashville, Tenn.—p. 46.
Relation of Heredity and Early Environment to Character Formation. L. F. Barker, Baltimore.—p. 50.
Spontaneous Meningeal Hemorrhage. F. H. Redwood, Norfolk, Va.—p. 53.

Etiology of Pemphigus.—Lanford's experimental studies and clinical observations have failed to disclose some causal agent in chronic pemphigus. He regards the ordinary micro-organisms found in the cutaneous lesions and in the blood stream, and considered by others to have a possible etiologic significance, as being extraneous and secondary invaders. Microscopic studies of the tissues from the human being and experimental animal have not revealed any constant or significant lesions which might be considered characteristic of pemphigus. While the bleb of the human disease is the characteristic lesion, microscopically it does not differ from the bleb or blebs of a variety of other conditions. The failure to produce the bleb in the experimental animal with either the clear or purulent bleb content from the human being suggests either that the etiologic agent is absent or that the animal employed is not highly susceptible. It is Lanford's opinion, which is based on the clinical course in man and the experimental work carried out, that the disease is most probably infectious and that the causal agent is a filter passer.

Southwestern Medicine, Phoenix, Ariz.

11: 523-574 (Dec.) 1927

Poliomyelitis. W. H. Park and J. B. Neal, New York.—p. 523.
Pneumoperitoneum as Aid in Diagnosis of Abdominal Lesions. L. R. Sante, St. Louis.—p. 529.
Differentiation of Tuberculosis and Bronchiectasis. W. W. Watkins, Phoenix.—p. 534.
Maternal Mortality. F. B. Sharp, Phoenix.—p. 538.
Cardiorenal Disease and Diabetes. F. Allen, New York.—p. 541.
Symptoms and Diagnosis of Chronic Appendicitis. F. J. Milloy, Phoenix. —p. 546.
Symptomatology and Diagnosis of Chronic Appendicitis in Children. D. Fournier, Phoenix.—p. 548.
Chronic Appendicitis: Pathology and Roentgen-Ray Diagnosis. H. P. Mills, Phoenix.—p. 550.

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Surgery, Gynecology and Obstetrics, Chicago

46: 1-160 (Jan.) 1928

*Extradural Spinal Tumors: Primary, Secondary, Metastatic. C. A. Elsberg, New York.—p. 1.
*Influence of Fibroids on Pregnancy and Labor. J. O. Polak, New York. —p. 21.
*Prevalent Denial of Functions Long Attributed to Gallbladder. E. A. Boyden, Chicago.—p. 30.
Unilateral Renal Aplasia: Six Cases. D. W. MacKenzie and A. B. Hawthorne, Montreal.—p. 42.
*Carcinoma of Esophagus. E. S. Clayton, Philadelphia.—p. 52.
Injuries of Large Arteries. B. Lipshutz, Philadelphia.—p. 62.
*Effects of Anesthetics on Minute Cardiac Output and Blood Pressure. A. Blalock, Nashville, Tenn.—p. 72.
*Empyema in Children. C. E. Farr and M. I. Levine, New York.—p. 79.
Intramural and Isthmic Portion of Fallopian Tubes: "Isthmospasm" in Tubal Occlusion. I. C. Rubin, New York.—p. 87.
Heliotherapy in Hip Joint Tuberculosis. A. Rollier, Leysin, Switzerland. —p. 95.
Technic of Removal of Cysts and Sinuses of Thyroglossal Duct. W. E. Sistrunk, Rochester, Minn.—p. 109.
Repair of Internal Ring in Oblique Inguinal Hernia. F. G. Connell, Oshkosh, Wis.—p. 113.
*Lead Treatment of Cancer. H. J. Ullmann, Santa Barbara, Calif.—p. 119.
Intra-Abdominal Tuberculosis. L. Dretzka, Detroit.—p. 122.
Synovectomy of Knee Joint. C. H. Heyman, Cleveland.—p. 127.
*Anomaly of Intestinal Rotation. J. W. G. Grant, Cardiff, Wales.—p. 133.

Extradural Spinal Tumors.—Of 179 spinal tumors analyzed by Elsberg, excluding intramedullary and metastatic growths, forty-six, or 26 per cent, were extradural and 133, or 74 per cent, were intradural. The meningeal and perineurial fibroblastomas formed a large proportion of the tumors inside the dural sac, but they were much less frequent outside of that membrane (82 per cent of intradural and 17 per cent of extradural growths), while the sarcomas and chondromas, which formed 61 per cent of the extradural tumors, were comparatively rare inside of the dura (6 per cent of intradural extramedullary growths were classified as sarcomas).

Fibroids and Pregnancy.—It is stated by Polak that surgery in the puerperium is indicated only in the pedunculate, subserous and intra-uterine polypoid growths, and that radium and the roentgen ray do not have any place in the management of the hemorrhages from these tumors during puerperium.

Function of Gallbladder.—It seems reasonable to Boyden to assume that in the cat, dog, guinea-pig and man, bile is expelled primarily by the contractile force of the muscle tunic of the gallbladder. With this fact assured, the immediate problem of the future is to find that mechanism by means of which the gallbladder musculature itself is activated, and how the flow of bile from the common duct is regulated.

Carcinoma of Esophagus.—In the forty-one cases of esophageal carcinoma reviewed by Clayton, metastases occurred below the diaphragm in twenty-two. In nine of these the metastases were extensive; in eleven, metastases occurred in the liver; in eight, only the glands at the fundus of the stomach and the celiac chain were involved. There were four instances in which the metastasis occurred below the diaphragm without any above it, and all the primary growths were fairly large, involving only the lower third of the esophagus. In one case, metastasis occurred in the liver, kidneys, suprarenals and lymph glands; in the others, it was limited to the celiac and mesenteric lymph glands. Metastasis limited above the diaphragm was present in nine cases, and in four instances it was extensive. There were eighteen cases in which the metastasis occurred both above and below. Ten of the cancers, or about 25 per cent, did not show any metastasis; one, however, had perforated and had given rise to an empyema. Two of them were prickle cell cancers, grade 1; five prickle cell cancers, grade 2, and two, prickle cell cancers, grade 3. One was a basal cell cancer. The cancers of the higher grades that did not give rise to metastases were of a short duration.

Effect of Anesthetics on Cardiac Output.—The cardiac output and the blood pressure of the dog have been studied by Blalock during the administration of ether, chloroform and ethyl chloride anesthetics. The results were the same whether or not morphine was used. Ether anesthesia caused an increase in the cardiac output in every instance. The mean blood pressure was slightly elevated during the anesthetic. Chloroform anesthesia was associated with a definite decrease in the cardiac output and blood pressure in every experiment. The changes during ethyl chloride anesthesia were more variable, but usually consisted of a slight decrease in the cardiac output and blood pressure. Its effect was thought to be intermediate between that of ether and chloroform.

Empyema in Children.—Three hundred and seventy-one cases of empyema in children were studied by Farr and Levine. Fully 92 per cent of all cases were either complications of or sequelae to an attack of pneumonia. The mortality during the first year was 66 per cent, whereas during the second year it dropped to 33 per cent. After the second year the mortality rate steadily declines until about the age of 6 years. After that the deaths are seldom and usually result from severe complication. The total mortality for this series of 371 cases was 19 per cent, there being seventy-two deaths. From the first and including the sixth year there was a mortality of 22 per cent. From the sixth to the fourteenth year, the mortality was only 10 per cent. The various methods of treatment now in use seem to have little influence on the prognosis. Death from empyema in children is in almost all instances due to a general condition of debility brought on by the previous illness, or due to existing complications and not to the empyema itself.

Lead Treatment of Cancer.—Ullmann uses solutions of lead orthophosphate which keep indefinitely at room temperature and apparently do not alter their toxicity with age. He does not believe that lead should, at present, take the place of the time tried methods of surgery and radiation, but should be reserved for those unfortunates who are beyond the reach of either. It is necessary, in order to obtain the maximum benefit, to combine the roentgen ray or radium with the lead injections, and therefore absolutely essential that the user be not only a good clinician but a radiologist as well, or be in close operation with a competent radiologist. He must be familiar with the effects of lead and of radiation, not only on the tumor but on the body as a whole, and must be prepared to combat lead as well as roentgen-ray intoxication. The only direct contraindications to the use of the lead phosphate are a severe anemia and perhaps lung involvement not secondary to breast carcinomas.

Anomaly of Intestinal Rotation.—The case reported by Grant is one of failure of the second stage of rotation. A large amount of small intestine lay to the right of the cecum and ascending colon, and when these were traced up it was found that in the right hypochondrium there was a series of U-shaped loops plastered onto the posterior abdominal wall. They were kinked and moderately dilated, and were fixed to each other by membranous adhesions. The hand passed below the transverse colon failed to find the duodenojejunal flexure in the normal situation. An attempt was made to unravel the adherent coils when it was found that they comprised the second and third stages of the duodenum and passed insensibly into the jejunum. The superior mesenteric artery did not cross the duodenum but ran down to the right of the cecum and ascending colon.

Tennessee State M. Association Journal, Nashville

20: 273-299 (Dec.) 1927

Convulsions in Infancy and Childhood. J. T. Smith, Knoxville.—p. 273.
Discharges from Vagina Other Than Bloody. L. E. Burch, Nashville. —p. 278.
*Use of O-Iodoxy-Benzoic Acid in Treatment of Arthritis. J. E. Cottrell, Philadelphia.—p. 280.

O-Iodoxy-Benzoic Acid in Treatment of Arthritis.—Cottrell reports his experiences with the use of o-iodoxybenzoic acid in twenty cases of arthritis. Two patients were cured; six were markedly improved; four were moderately improved; six were slightly improved, and two were unimproved. Cottrell advocates administration of the drug intravenously in doses of 1 Gm. semiweekly for six or eight weeks. Subsequent courses may follow at intervals of from three to six weeks or longer. If intravenous injection is impossible, the drug may be administered by mouth or by rectum. Concomitant and persistent use of physical therapy is indicated if the arthritic process is not too acute.

Virginia Medical Monthly, Richmond

54: 539-606 (Dec.) 1927

Physician's Part in Popularizing Breast Feeding and Reducing Infant Mortality. W. A. Plecker, Richmond.—p. 539.
Typhus Fever in Child. St. G. T. Grinnan and M. Call, Richmond.—p. 543.
Chemistry and Medicine. W. F. Rudd, Richmond.—p. 545.
Five Years' Treatment of Diabetes with Insulin. E. G. Hill, Richmond. —p. 548.
*Relation of Infection of Biliary Tract to Pathogenesis of Diabetes Mellitus. L. E. Stubbs, Newport News.—p. 550.
Cancer of Rectum: Two Cases. H. W. Bachman, Bristol.—p. 552.
Value of Graham Technic in Study of Gallbladder Disease. E. A. Merritt, Washington, D. C.—p. 555.
*Treatment of Eclampsia with Magnesium Sulphate. M. P. Rucker, Richmond.—p. 558.
Control of Tuberculosis in Negro. C. R. Grandy, Norfolk.—p. 566.
Goiter: Classification and Management. R. O. Rogers, Bluefield, W. Va. —p. 571.
Surgery in Diabetes. J. W. Devine, Lynchburg.—p. 575.
Roentgen Ray in Dermatology. F. J. Eichenlaub, Washington, D. C. —p. 577.
Malnutrition. S. Wilson, Lynchburg.—p. 581.
"Lest We Forget." J. L. Miller, Thomas, W. Va.—p. 585.
Polyuria. W. B. Lyles and R. P. Finney, Spartanburg, S. C.—p. 587.

Biliary Tract Disease and Diabetes.—A study by Stubbs of the records of 100 diabetic patients showed definite clinical evidence of the presence of biliary tract disease in thirty-eight, or 38 per cent.

Treatment of Eclampsia with Magnesium Sulphate.—Thirty-six patients with eclampsia were treated by Rucker with magnesium sulphate. Twenty-six received a single intravenous injection; six, two intravenous injections, and two, three intravenous injections. In two cases, the magnesium sulphate was given intramuscularly. There have not been any untoward effects, and there were no maternal deaths. In ten cases of eclampsia not treated with magnesium sulphate, there were two maternal deaths. In the forty cases in which the outcome of the baby is known, there were forty-one babies. Twenty-four were born alive, with five neonatal deaths, and seventeen were still-born, a fetal mortality of 53.6 per cent. The fetal mortality in the group that was treated with magnesium sulphate was 45.1 per cent.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 1013-1062 (Dec. 3) 1927

Surgical Convalescence. C. Roberts.—p. 1013.
Results of Insulin Therapy in Diabetes Mellitus. H. Maclean.—p. 1015.
Value of Insulin. K. A. Petrén.—p. 1019.
Classification of Glycosuria from Point of View of Insulin Treatment. P. J. Cammidge.—p. 1020.
*Pulmonary Asbestosis. W. E. Cooke.—p. 1024.
Id.: Histology. S. McDonald.—p. 1025.
*Id.: Clinical Aspects. T. Oliver.—p. 1026.
Active Constituents of Preparation Called "Glukhorment." H. H. Dale and H. W. Dudley.—p. 1027.
*Gallstone Formation. E. W. Hall.—p. 1027.
Pregnancy Complicated by Mitral Stenosis. L. B. Phillips.—p. 1029.
*Early Cystoscopic Sign of Renal Tuberculosis. F. Jeans.—p. 1029.

Pulmonary Asbestosis.—Cooke reports one case coming to necropsy in which death was caused by the inhalation of asbestos. The asbestos industry is more than 2,000 years old, yet this is only the second case of the kind reported. The blackened brittle parts of the asbestos fiber are the iron-containing portions—the bugbear of the manufacturer, the cause of "dust," and a danger to the health of workers in the process of manufacture.

Pulmonary Asbestosis.—Oliver is convinced that there must have been several deaths of workers in British asbestos factories from pulmonary asbestosis, but as neither post-mortem nor microscopic examinations of the lungs were made, the deaths were probably certified as pulmonary tuberculosis.

Gallstone Formation Around Suture.—Hall reports the case of a woman who was operated on in 1924 for gallstones. The stones were removed and the bladder was drained. In September, 1927, she had a definite attack of colic. Hall operated on the woman and removed the gallbladder. On opening it after the operation, he found two stones inside which had formed around the purse-string suture inserted at the first operation, the suture running through the whole length of the stone.

Early Cystoscopic Sign of Renal Tuberculosis.—The sign described by Jeans is said to be a rebound of the colored urine on the pathologic side (methylene blue or indigo carmine being used), caused by the stream impinging on the lower edge of the ureter opening, which is slightly raised, hardened and thickened.

2: 1127-1170 (Dec. 17) 1927

Detachment of Retina. W. T. Lister.—p. 1127.
Value of Antiseptics in Modern Ophthalmic Surgery. A. Lawson.—p. 1128.
Pathology of Tuberculosis of Childhood. E. L. Opie.—p. 1130.
Vomiting After Operations on Stomach. A. R. Short.—p. 1135.
Etiology and Treatment of Psoriasis. J. H. Heaney.—p. 1136.
Circulation in Living Liver. J. M. McQueen.—p. 1137.
*Clinical Value of Andrewes Diazo Test in Renal Inefficiency. G. A. Harrison and L. F. Hewitt.—p. 1138.
Case of Thallium Poisoning. J. H. T. Davies and M. C. Andrews.—p. 1139.
*Foreign Body in Bladder. H. H. Woods.—p. 1140.
Congenital Ununited Fracture with False Joint. E. Thorp.—p. 1140.
Treatment of Spirillum Fever with Stovarsol. A. T. Schofield.—p. 1140.

Andrewes Diazo Test of Renal Insufficiency.—Harrison and Hewitt endorse the value of the Andrewes diazo test in uremia or severe renal inefficiency. The unknown substance responsible for the reaction does not appear to pass into the cerebrospinal fluid, and is either absent from, or present only in minute quantities in, the red blood corpuscles. The blood in uremia obtained post mortem often gives the reaction. Nitrogenous retention always accompanies retention of the substance responsible for the reaction, but urea retention and the Andrewes test do not run strictly in parallel. An outline of a simplified method is given. It is asserted that the reaction thereby becomes a simple clinical test.

Piece of Wood in Bladder.—In this case, Woods removed a piece of wood 3½ inches long by 1 inch wide, partly covered with calcareous deposit, evidently a peg-label for garden plants. The patient had used the wood to insert some pledgets of lint soaked in lead lotion on account of an inflamed state of the vagina, and did not know that the wood had remained inside.

Lancet, London

2: 1275-1326 (Dec. 17) 1927

Present Position of Voluntary Hospitals. E. G. Little.—p. 1275.
Insomnia. E. M. Callender.—p. 1280.
*Vaccine Treatment of Implanted Tumors in Rat. T. Lumsden.—p. 1283.
Zünd-Burguet Method in Children. M. Yearsley.—p. 1285.
Nicoll's Operation for Femoral Hernia. A. Edmunds.—p. 1287.
Pulmonary Infarction Complicating Typhoid. R. Massingham.—p. 1289.
*Two Unusual Cases of Fever. E. Wordley.—p. 1290.
Onchocerca Volvulus in Amputation Stump of Foot. N. A. D. Sharp.—p. 1290.

Vaccine Treatment of Implanted Tumors.—By means of appropriately managed local injections of liquor formaldehydi into a tumor while it is still growing in the body of a rat, Lumsden succeeded in injuring some of the tumor cells in such a way that their vitality was destroyed without annihilating the antigenic constituent they had been shown to contain. Absorption into the general circulation of the vaccine so produced gave rise to an active immunity which completed the cure of the treated tumor and prevented recurrence. By vaccine treatment of this sort very virulent tumors (J. R. S.), weighing as much as one one-hundredth of the body weight, were made to disappear. Of seventy tumor-bearing rats so treated, fifty-four were cured—i. e., 77 per cent. In the four latest experiments the percentage of cures rose to 96—i. e., twenty-four animals cured out of twenty-five treated. Forty-three animals so cured were subsequently inoculated with grafts of the tumor concerned. In only three of these did the implant grow progressively—i. e., forty (93 per cent) of the rats proved to be immune. The general principle rather than the individual method is emphasized by Lumsden; namely, that by local treatment of a tumor in corpore a vaccine capable of evoking active tumor immunity can be produced.

Unusual Cases of Fever.—Wordley reports two cases of obscure fever in which the symptoms were almost exactly similar; the disease in each case ran a very similar course. The patients were taken ill with malaise, pain in the limbs, headache and sweating. The temperature rose very regularly to about 101 F. at about 5 p. m., after which the patient sweated profusely. The liver and spleen were not enlarged. Fifteen days from the onset of the initial symptoms the fever subsided, but there was still headache and considerable lassitude. Eight days after the temperature had fallen there was a return of the fever and sweating. Pains in the joints were especially marked, and there was swelling of several of the larger joints, which quickly subsided. At this point, a tentative diagnosis of an enteric infection was made. The blood was tested for agglutination. It proved to be negative to the enteric group of organisms, but agglutinated *Micrococcus melitensis* up to a dilution of 1:400, 1:800 being negative. The fever continued altogether for about two months, slowly subsiding, but a considerable degree of weakness was left.

Medical Journal of Australia, Sydney

2: 797-826 (Dec. 10) 1927

Some Modern Conceptions and Advances in Surgery. H. S. Stacy.—p. 798.
Orthopedic Aspect of Low Back Pain. D. J. Glissan.—p. 803.
Low Back Pain. C. Bowker.—p. 808.
*Intradermal Reaction in Schistosomiasis. N. H. Fairley and F. E. Williams.—p. 811.

Intradermal Reaction in Schistosomiasis.—A new intradermal skin test for schistosomiasis is described by Fairley and Williams, the antigen being derived from the dried powdered livers of snails (*Planorbis exustus*) infected with bilharzia cercariae (*Schistosoma spindalis*). The reaction is characterized by the rapid appearance of a large white wheal, from 2 to 3 cm. in diameter, with pseudopodia-like outrunners and a surrounding zone of erythema. Delayed reactions are manifested by erythema, hotness of the skin and puffy swelling of the deeper tissues occurring from three to twenty-four hours after the initial injection. Seven out of eight patients who were or had been suffering from bilharzia (*Schistosoma hematobium*) contracted in Africa gave immediate reactions. Three of them also showed responses of delayed type. Out of forty-seven control patients forty-four failed to give reactions, while three gave immediate but not delayed reactions. The test is exclusively of diagnostic value and does not afford

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any index to the effects of drug treatment. Reactions were given by two patients treated for bilharziasis who were regarded as cured on both serologic and clinical grounds.

Practitioner, London

119: 341-404 (Dec.) 1927

*Nasal Disease in Relation to Asthma. J. Dundas-Grant.—p. 341.
*Tonsillectomy in Adult Patients. G. C. Cathcart.—p. 349.
Prognosis in Pulmonary Tuberculosis. M. Davidson.—p. 357.
*Difficulties in Percussion of Chest Wall. J. L. Halliday.—p. 366.
Liver Treatment of Pernicious Anemia. G. Bourne.—p. 373.
Malarial Treatment of General Paralysis. H. W. Bayly.—p. 382.
Therapeutics of Active Orchitic Extract. E. C. Plummer.—p. 388.

Nasal Disease in Relation to Asthma.—Dundas-Grant urges that in all cases of spasmodic asthma the nasal septum and middle turbinals should be inspected and, if open to suspicion, dealt with by the usual rhinologic methods.

Tonsillectomy in Adults.—Cathcart feels that too often physicians fail to remove tonsils from adults. He has enucleated the tonsils of seventy-two persons over 50, twenty-four of these being over 60. The operation was entirely satisfactory in every case; not only were there no fatalities, but there was never a moment of anxiety during any of the operations; in no case was artificial respiration performed, nor did any of the patients have postoperative hemorrhage severe enough to require ligation of a vessel. The complaint of being "always tired" should direct suspicion toward the tonsils.

Difficulties in Percussion of Chest Wall.—In Halliday's opinion, percussion is ineffectively taught in medical schools; metaphysical terms such as dulness and hyperresonance should be abandoned for teaching purposes. Although to the experienced physician these terms have a definite significance, they nevertheless tend to prevent proper consideration of the morbid conditions underlying the phenomena of percussion and to cause an element of mystery to be attached to this particular clinical method. There is nothing supernatural in percussion.

Bulletin Médical, Paris

41: 1183-1210 (Oct. 29) 1927

*Treatment of Cirrhoses. G. Lyon.—p. 1189.

Treatment of Cirrhoses.—In the early stages of alcoholic cirrhosis of the liver, treatment by diet with suppression of all alcoholic beverages is efficacious. The diet is gradually increased from water through milk and lactovegetarian, to mixed. Sodium phosphate may be prescribed and, for variety, the different alkalis, combined with potassium iodide. Hepatic opotherapy, in the form of powdered liver, is a new remedy. Among diuretics, theobromine has been preferred. Glycogen, the action of which is still obscure, is also used. Purgatives complete the action of the diuretics. If the cirrhosis is syphilitic, intravenous injections of cyanide of mercury are given and at the same time potassium iodide is administered either by mouth or by rectum. In tuberculous cirrhosis the treatment is the same as in alcoholic cirrhosis.

Bulletins de la Société Médicale des Hôpitaux, Paris

43: 1413-1447 (Nov. 3) 1927

Involuntary Movements of Neck and Upper Left Extremity: Probable Lethargic Encephalitis. L. Babonneix and A. Widiez.—p. 1413.
Asthma Provoked by Emanations of Cat: Desensitization by Repeated Cutireactions. T. Reb.—p. 1415.
Infarct of Lung and Cavities from Necrobiosis. D. Olmer.—p. 1417.
*Two Cases of Raynaud's Syndrome After Influenzal Pulmonary Congestion. P. Isaac-Georges.—p. 1423.
Laboratory Diagnosis of Mycotic Splenomegalies. P. Emile-Weil, P. Chevallier and P. Flandrin.—p. 1425.
Two Cases of Postcancerous Pulmonary Gangrene. Léon-Kindberg, C. Grandclaude and R. Cattan.—p. 1429.
Case of Neoplastic Generalization of Probable Pulmonary Origin. Léon-Kindberg and R. Garcin.—p. 1437.
Spinal Fluid Hypertensions of Mechanical Origin. A. Tzanck and P. Renault.—p. 1441.
Spinal Fluid Tension and Deep Venous Pressure. A. Tzanck and P. Renault.—p. 1444.

Two Cases of Raynaud's Syndrome After Influenzal Pulmonary Congestion.—After a review of the literature, Isaac-Georges reports two cases of his own in which the coincidence between the beginning of Raynaud's syndrome and an influenzal syndrome was striking.

Écho Médical du Nord, Lille

31: 562-574 (Oct. 22) 1927

Tibiotarsal Tuberculosis. R. Le Fort and J. Piquet.—p. 562.
*Periarterial Sympathectomy in Atheromatous Senile Arteritis. H. Gaudier.—p. 563.
Cancer as Cicatricial Vitiation. G. Siauve-Evausy.—p. 565. C'en.

Periarterial Sympathectomy in Atheromatous Senile Arteritis.—In this case of extremely painful senile arteritis, Gaudier resected the neural sheath of the upper femoral artery for a distance of four centimeters. The pain ceased entirely the next day and within three weeks the patient left the hospital with ulcerations cured, without pain and with no other trophic disturbances than a difference in temperature between the two feet. The general condition was perfect four months later.

Gazette Hebdomadaire des Sciences Méd. de Bordeaux

48: 705-720 (Nov. 6) 1927

*Acute Nephritis and Necrosing Pancreatitis in Mumps, Followed by Death. J. Sabrazès, P. Broustet and R. Beaudiment.—p. 705.
*Examination for Spirochetes in Spinal Fluid, Urine and Testes of Mumps Patients. J. Sabrazès and P. Broustet.—p. 707.
Hypertrophy of Thymus and Status Lymphaticus. R. Dupérié.—p. 707.
Velopalatine Asymmetry in Lingual Hemiplegia. J. A. Lafite-Dupont.—p. 713.

Acute Nephritis and Necrosing Pancreatitis in Mumps.—The case reported is that of a boy, aged 19 years, who, late in October on about the fifth day of an attack of mumps, escaped from the hospital during the night and walked about four miles. He died two days later with symptoms of acute nephritis. At necropsy the pancreas was found enlarged and histologically much altered. There was massive necrosis. The intense acute nephritis, the infectious liver, the congestion and acute edema of the lungs, and the slight meningeal lymphocytosis found were attributed to the mumps.

Examination for Spirochetes in Spinal Fluid, Urine and Testicle of Mumps Patients.—Sabrazès and Broustet were unable to demonstrate the spirochete described by Kermorgant in the spinal fluid, urine or testicle of patients with mumps complications.

Paris Médical

63: 341-380 (Nov. 5) 1927

Children's Diseases in 1927. P. Lereboullet and F. Saint Girons.—p. 341.
*Treatment of Rickets. A. B. Marfan.—p. 358.
Leanness of Heredosyphilitic Origin in Later Childhood. G. Mouriquand, M. Bernheim and A. Lesbros.—p. 362.
Small Stature and Nanism. P. Nobécourt.—p. 367.
Etiology and Vaccine Therapy of Bronchopneumonias. A. Dufourt.—p. 373.
*Ordinary Serum, Purified Serum and Anatoxin in Treatment of Diphtheritic Angina. P. Lereboullet.—p. 379.

Treatment of Rickets.—In the treatment of rickets, Marfan recommends a careful diet and hygiene and a visit to the seashore. The skin should be stimulated with salt-water baths and massage. Heliotherapy, especially ultraviolet radiations, modifies the nutrition of rachitic children. In his clinic Marfan uses the mercury-vapor quartz lamp of from 1,200 to 2,500 candle power to irradiate the child, who lies naked on a bed, 50 cm. from the lamp at first, later 40 and 35 cm. The séance lasts at first three minutes for each side and later reaches ten minutes for each side. The treatments are given daily for fifteen days. After a rest period of equal length, treatment is resumed. Ultraviolet radiations improve the general condition. Cod liver oil is much less efficacious than ultraviolet rays. Of calcium preparations, tricalcium phosphate, calcium lactate and calcium formate give the best results. With them may be combined epinephrine, which is said to fix the calcium in the tissues and in the bones. From 15 to 18 drops of the 1:1,000 solution are administered per os, twice a day, before meals. This combination of epinephrine and calcium salts yields very good results, if not better than cod liver oil. Phosphorus, in solution in oil of sweet almonds or cod liver oil, is especially useful when rickets is complicated by tetany. In this case from one to three teaspoonfuls of a 1:10,000 oily solution daily is prescribed. This solution is taken easily in milk. The bones are much more slowly affected by the treatment than is the general condition. One of the earliest signs of improvement is the disappearance of muscular hypotonia.

Ordinary Serum, Purified Serum and Anatoxin in Treatment of Diphtheritic Angina.—Antidiphtheritic serotherapy should be instituted early and should be prolonged. The intramuscular and subcutaneous routes should be used. Lereboullet speaks of a purified antidiphtheritic serum, or purified antitoxin, a dealbuminated serum, in which are preserved only the pseudoglobulins containing nearly all the antitoxin which was present originally in the serum. It contains so few serum proteins that it rarely produces serum accidents, even in relatively high doses. The dose of 1,000 units is used in prevention. In treatment, it is necessary to inject 20,000 units or more. In spite of the large amount of protein contained in this dose, serum accidents are less frequent and intense than with ordinary serum. Since with equal doses purified serum seems slightly less active than ordinary serum, it is not always the best treatment for malignant diphtheria. Ordinary serum seems to possess a therapeutic power not parallel with its antitoxic power and, as a rule, somewhat higher. Not less than 200 cc. per day should be given and this injection should be repeated on four or five consecutive days. Antidiphtheritic vaccine does not play a therapeutic rôle. Its action is preventive. Immunization may be provoked by the administration of three injections of 0.5 cc., 1 cc. and 1 cc., respectively, at intervals of three weeks. Local treatment is useless in diphtheritic angina.

Presse Médicale, Paris

35: 1329-1344 (Nov. 2) 1927

*Vaccination Before Operation. P. Mornard.—p. 1329.
Antirabic Methods. C. Fermi.—p. 1339.

Vaccination Before Operation.—By means of energetic vaccination it is possible, in the case of septic operations, to put the patient in the best condition for the operation, to reduce the extent of the latter and consequently the mutilation, and to shorten convalescence in every case in which extreme urgency does not force the surgeon's hand. A polyvalent stock vaccine is used. Injections are given every second day until three have been given. The dose is 4 cc. for the first, 6 cc. for the second and from 6 to 8 cc. for the third injection; they are made into the subcutaneous tissue of the thigh. The author recommends the eighteenth day for the operation. By a study of the leukocytic formula, one can predict pulmonary complications of operations on the digestive and biliary tracts and cellulitis after rectal operations. Vaccination against pulmonary complications was accomplished in a large number of cases by five daily injections of an antipneumococcic vaccine. Although among his protected patients he saw some serious cases and two cases of fatal gangrenous bronchopneumonia, nevertheless, he is convinced that his cases were, on the whole, less severe than they would otherwise have been, and that preoperative vaccination increases the resistance of the patient against pulmonary complications. Waste of time would be eliminated if at the beginning of the illness the physician would make a hematologic examination and would begin vaccination before bringing the patient to the surgeon.

35: 1345-1360 (Nov. 5) 1927

*Epidemics of Infectious Exanthems of Indeterminate Nature. Boinet and J. Piéri.—p. 1345.
*Exanthematic Typhus and Typhoid Infection with Exanthem. D. Olmer and J. Olmer.—p. 1346.

Epidemics of Infectious Exanthems of Indeterminate Nature.—Boinet and Piéri report nine cases of an unusual disease, which has been considered by some to be a light form of typhus (Brill's disease). The onset of the disease is sudden. There is headache, a saburral condition of the digestive tract and rapid rise of temperature to about 40 C. The eruption appears on the third day and lasts a week. In several instances, the authors noted a small dark slough which they call the "black spot" and which may be the point of inoculation of the disease. Prostration, similar to that of even a light case of typhus is not present. The exanthem does not spare the face. All reactions to *Proteus* X_{19} were negative in these cases while they are positive both in typhus and in Brill's disease. None of the patients had lice.

Exanthematic Typhus and Typhoid Infection with Exanthem.—The exanthematic fever recently observed around Marseilles differs from exanthematic typhus in the following points: It occurs in summer, and among all classes, rich or poor. No parasites are present and it is only slightly contagious. Conjunctival injection is frequent. The face is often involved in the eruption. A pharyngeal exanthem occurs frequently, sometimes with ulcerations. Stupor is exceptional and meningeal signs are absent. There is frequently a necrotic cutaneous lesion, appearing early and persisting. Complications are exceptional, and the mortality is low. Agglutination of *Proteus* X_{19} is inconstant and tardy. Inoculation of blood from patients into the guinea-pig is without result.

Schweizerische medizinische Wochenschrift, Basel

57: 1041-1064 (Oct. 29) 1927

Division of Heredity in Uniovular Twins. E. Ludwig.—p. 1041.
Acute Otitis Media with Influenza. E. Schlittler.—p. 1042.
*Postoperative Treatment and Treatment of the Severely Injured. E. Baumann.—p. 1045.
*Treatment of Tetanus by Hypodermic Reinjection of Cerebrospinal Fluid. G. Spányi.—p. 1047.

Postoperative Treatment and Treatment of the Severely Injured.—Thirst after operations on the stomach is best combated, in Baumann's experience, by the rectal drip method (from 400 to 800 cc. of camomile tea to which 20 drops of tincture of opium has been added). Threatened paralytic ileus is met by intravenous infusion of solution of pituitary by Vogt's method, modified, for economic reasons, so as to avoid waste of the solution. First sodium chloride solution is injected very slowly into the vein. Then 1 cc. of solution of pituitary is drawn into a syringe having a capacity of 20 cc. The syringe is then filled with physiologic solution of sodium chloride. This mixture is injected slowly into the infusion tube, where it becomes further diluted with the infusion fluid. Further quantities of pituitary solution are added in the same manner, as needed. From 1 to 2 cc. frequently suffice. The infusion should take at the most from fifteen to twenty minutes, and must be interrupted if sweating or nausea occurs. The patient must be carefully watched during the procedure. Shock and collapse are treated by slow intravenous infusion of 10 per cent dextrose solution to which 1 unit of insulin for every 3 Gm. of dextrose has been added. The usual dose is 300 cc. of the infusion, containing 10 insulin units. If the heart is injured, the dextrose concentration is made twice as strong and 150 cc. is used, with 10 units of insulin.

Treatment of Tetanus by Hypodermic Reinjection of Cerebrospinal Fluid.—In addition to the usual treatment with serum and narcotics, Spányi withdraws from 5 to 10 cc. of the patient's cerebrospinal fluid and injects it beneath the skin of the abdomen or thigh. Out of ten patients thus treated, seven recovered. He believes that the cerebrospinal fluid of patients with tetanus contains a protective substance of some sort.

Pediatria, Naples

35: 913-968 (Sept. 1) 1927

*Blood Phosphorus in Children's Diseases. A. Laurinsich.—p. 913.
*Treatment of Erysipelas in Children. M. Giuffrè.—p. 920.
Red Cells in Infantile Anemias. S. Barberi.—p. 935.
*Prostaticovesical Stone in a Child G. Olivieri.—p. 946.
Congenital Myatonia. V. Cioffi.—p. 952.

Blood Phosphorus in Children's Diseases.—In twenty-five normal children the phosphorus averaged 4.84 mg. per hundred cubic centimeters of blood serum. In twenty-five children with adenoids the average dropped to 3.19 mg. In six cases of mongolism, myxedema and congenital myotonia, the figures were even lower. No change could be found in five thin but constitutionally sound children.

Vaccine Therapy of Erysipelas in Children.—Fifteen children were treated with intravenous or intramuscular injection of a stock vaccine which included several strains of pyogenic and erysipelatous streptococci. The injections were made, as a rule, every other day. In general, the improvement was striking, almost from the first injection. The injection causes a general reaction, a focal reaction and (when the intramuscular route is used) a local reaction.

Huge Prostaticovesical Stone in a Child.—Among European nations, Italy stands high as regards occurrence of calculi. The greatest prevalence belongs to some parts of Naples and

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Sicily. Olivieri singles out a case, among the many in his service, occurring in a child, aged 11. The stone's greatest length was 8 cm.; its greatest width, 4 cm. It weighed 60 Gm. There had been hematuria for some time. At the age of 4, the child had to be catheterized for acute urinary retention, and at the age of 5, a vesical stone weighing 6 Gm. was removed.

Boletín de la Soc. de Obst. y Ginecol., Buenos Aires

6: 440-506 (Nov. 13) 1927. Partial Index

*Jaundice in the New-Born. F. A. Deluca.—p. 440.
Change of Presentation During Labor. N. Palacios Costa.—p. 445.
Recurrent Eclampsia in Same Pregnancy. A. J. Güiroy.—p. 450.

Vernix Caseosa and Jaundice in the New-Born.—Keiffer was only partially right in holding that the first bath is the cause of jaundice in the new-born, as it removes the vernix caseosa and thus causes them to take cold. Chilling, Deluca claims, is not the primary, but a contributory cause. It merely increases the pigmentary change in the blood extravasated by a previous hemorrhage. In the discussion, Palacios stated that in the Ramos Mejia Hospital, the new-born are not bathed and all the greasy covering is gone within twenty-four hours. The blood must be removed, however, as it may become offensive.

Semana Médica, Buenos Aires

34: 1325-1400 (Nov. 17) 1927. Partial Index

*Insulin in Gastric Ulcer. J. R. Goyena.—p. 1325.
Pain with Echinococcus Infestation. O. Ivanissevich.—p. 1334.
Syphilis of Respiratory Tract. J. C. Navarro and E. A. Beretervide. —p. 1343. C'td.
Epithelioma in Vater's Papilla. D. del Valle and D. Brachetto-Brian. —p. 1358.
*Tuberculosis of Kidney in Husband and Wife. J. Salleras.—p. 1364.

Gastric Ulcer Cured with Insulin.—In view of the success of insulin in ulcers in the leg and slow-healing operative wounds, and as obliterating arteritis is invariably present in gastric ulcer, Goyena tried insulin in one case. The cure was complete, as proved by roentgen ray and laboratory examinations.

Renal Tuberculosis in Husband and Wife.—The patient's husband had been treated for renal tuberculosis eight years previously with apparent success. The disease in the wife dated from about the same time. The symptoms were identical in both. Cystitis is the only symptom remaining in the wife after nephrectomy.

Archiv für Gynäkologie, Berlin

131: 1-170 (Oct. 15) 1927

Influence of Labor and Puerperium on Chemism of Vagina. R. Kessler. —p. 1.
Urinary Quotient C: N in Pregnancy. A. Bock.—p. 17.
*Absorption of Orally Administered Calcium in Pregnancy. A. Bock.—p. 28.
*Multiple Myoma with Partial Malignant Degeneration. K. Ulesco-Stroganowa.—p. 34.
Glandular Polypus with Structure of Mucosa of Large Intestine in Fossa Navicularis of Twelve Year Old Girl. J. Schiffmann.—p. 40.
Hyperplasia of Uterine Mucosa and Ovarian Tumors. A. Babes.—p. 45.
Haemangioma Uteri. H. O. Neumann.—p. 50.
Hemorrhages of Ovarian Origin. A. von Fekete.—p. 67.
*Swelling of Uterus in Probable Relation to Ovulation. R. Joachimovits. —p. 86.
Is Leukocyte Count from Blood Streak and Thick Drop of Practical Clinical Value? W. W. Haagen.—p. 95.
Correct Time for Version and Extraction. K. Lundwall.—p. 104.
Clinical and Statistical Study of "Birth Traumas." H. Günther.—p. 133.
Heteroplasia of Tubal Mucosa. W. Mestitz.—p. 166.

Absorption of Orally Administered Calcium in Pregnancy.—Bock determined the calcium content of the blood in three normal persons and six pregnant women at short intervals after oral administration of calcium. He did not find any difference in the calcium absorption in the two groups. The calcemia was fleeting, reaching its maximum in about three quarters of an hour and returning to normal in twelve hours or less.

Multiple Myoma with Partial Malignant Degeneration.—A uterine myoma, removed from a woman, aged 59, is described by Ulesco-Stroganowa. Its peculiarity lies in the presence of nodules consisting exclusively of "cell groups," in addition to nodules made up of almost completely differentiated muscle cells. The neoplasm is, he considers, a tumor of muscle type, in which the differentiation of the muscle cells was interrupted at different stages, beginning with the embryonic stage.

Swelling of Uterus in Probable Relation to Ovulation.—Joachimovits has noted a swelling of the uterus between the ninth and twelfth day of the ovarian cycle. It is not present in all women and is regarded by him as a rudimentary physiologic phenomenon analogous to estrum. He mentions that some women have subjective sensations at this time, a feeling of weight in the pelvis and increased desire to urinate.

Deutsche medizinische Wochenschrift, Berlin

53: 1973-2014 (Nov. 18) 1927

Campaign Against Rickets. R. Degkwitz.—p. 1973.
Treatment of Complications of Therapeutic Abortion. Winter.—p. 1976.
Physician and Drug Habituation. E. Meyer.—p. 1978.
Clinical Value of Interfereometric Micromethod in Estimation of Abderhalden's Reaction. G. Pfeffer.—p. 1981.
Placental Transmission of Tuberculosis by Filtrable Bacilli. L. Rabinowitsch-Kempner.—p. 1982.
*Gold Therapy in Tuberculosis. W. Unverzagt.—p. 1985.
Influence of Chemical and Physical Agents on Serum Lipase. E. Adler. —p. 1987.

Gold Therapy in Tuberculosis.—Unverzagt does not see any great advantage in gold therapy over climatotherapy in pulmonary and laryngeal tuberculosis. It is true that, because of its effect in lessening the number of bacteria, recent and exudative foci can be reached. He warns against overestimating its value as a curative agent, and warns earnestly against its indiscriminate use. The productive form of laryngeal tuberculosis reacts more favorably to gold therapy than does pulmonary tuberculosis and presents fewer contraindications—but there are dangers, which may be met, although not wholly removed, by cautious dosage and careful observation of effects during treatment.

Klinische Wochenschrift, Berlin

6: 2121-2168 (Nov. 5) 1927

Chorea Minor. W. Gottstein.—p. 2121.
Disturbances of Absorption of Cholesterol and Fat in Cirrhosis of Liver. M. Bürger and H. Habs.—p. 2125.
*Infraclavicular Infiltrations in Beginning Tuberculosis. H. Assmann. —p. 2128.
Function of Subpapillary Vascular Plexus in Skin. E. Wollheim.—p. 2134.
*Oral Immunization Against Diphtheria. W. Pockels.—p. 2137.
Bacteria Counting in Dark Field. L. Wàmoscher.—p. 2139.
Experimental Sarcoma. K. Löwenthal.—p. 2140.
*Skin Reactions in Asthma. A. Anthony.—p. 2141.
*Combined Treatment with Atropine and Pilocarpine. R. Fischer.—p. 2142.
Spinal Fluid in Jaundice. P. Jaguttis.—p. 2143.
"Specificity": Reply to Weichardt. L. Haberlandt.—p. 2144.
Origin of Bacterial Toxins. M. Eisler and N. Kovács.—p. 2145.
New Bacteria-Inhibiting Property of Human Serum. L. K. Wolff.—p. 2145.
Case of Congenital Malaria. A. E. Tsakalotos and K. Choremis.—p. 2146.
Syphilis Resistant to Arsphenamine. E. Nathan.—p. 2147. C'td.
Health Work in Vocational Schools. I. Szagunn.—p. 2150.

Infraclavicular Infiltrations in Beginning Tuberculosis.—Assmann insists on the importance of early treatment of infraclavicular infiltrations, because they are in some cases the first perceptible foci from which the pulmonary tuberculosis of young adults develops.

Oral Immunization Against Diphtheria.—With doses of from ten to thirty normal loops of killed diphtheria bacilli it was possible in twenty-eight out of thirty-two children to obtain a negative Schick reaction in from four to five weeks. But the immunity is not strong, so that there is no question of absolute protection. It is possible, however, that the tissue immunity expressed by the negative Schick reaction is more important than the antitoxin content of the blood serum.

Skin Reactions in Asthma.—In fifty-seven patients the cause of asthma could not be ascertained by means of intracutaneous reactions with water-soluble allergen extracts. In forty-five patients, Anthony was able to show that the reactions to allergen extracts resemble, in general, other lymphagogue reactions and depend on the reaction condition of the skin.

Combined Treatment with Atropine and Pilocarpine.—Fischer advocates the use of pilocarpine in combination with atropine in those cases in which the use of atropine alone in efficacious doses would entail difficulties. Atropine may be given in the usual way, internally or subcutaneously. If

disturbances appear with a daily dose of 3 mg., the patient is given from 15 to 20 drops of a 1 per cent pilocarpine solution in a glass of water, with instructions to take a swallow every time the mouth feels dry or there are eye symptoms, so that the solution will be consumed in twenty-four hours. With increase of the atropine dose, the amount of pilocarpine may also be increased, and in this way inconvenience may be avoided, or, at any rate, kept within tolerable bounds. This treatment is valuable in gastric ulcer, hyperacidity, bronchial asthma and chronic bronchitis, and, it seems, also in spastic constipation, membranous colitis, cholelithiasis, etc.

Münchener medizinische Wochenschrift, Munich

74: 1859-1902 (Nov. 4) 1927

Determination of Lead and Arsenic in Wine After Treatment of the Grapes with Lead and Arsenic Preparations. E. G. Dresel and O. Stickl.—p. 1859.
Excretion of Methenamine. K. Voit.—p. 1861.
Tuberculosis and Ovarian Cycle. H. Runge.—p. 1863.
Determination of Parentage. K. Hutter.—p. 1865.
Experimental Study of Inflammation. C. Hamburger.—p. 1867.
Epidemic Fever in Oberlausitz. A. Mühling.—p. 1870.
*Tubercle Bacillus Carriers. M. J. Gutmann.—p. 1871.
Obliteration of Varicose Veins with Concentrated Sodium Chloride and Sugar Solutions. L. Isaak.—p. 1873.
Instrument for Plastic Operation on Nose. E. Eitner.—p. 1876.
Epidemiology of Typhoid. Bürgers.—p. 1876.
Pathogenesis of Nontuberculous Spontaneous Pneumothorax. B. Fischer-Wasels.—p. 1877.
Spontaneous Healing of Foot Deformity in Spina Bifida Occulta After Laminectomy. J. Kochs.—p. 1877.
Reaction of Melanophores to Solution of Pituitary. K. Ehrhardt.—p. 1879.
Primary Syphilitic Lesions on the Skin of the Back in Rabbits. A. Groth and K. Arnold.—p. 1881.
Importance of Exact Qualitative Diagnosis in Pulmonary Tuberculosis in Children. W. Pfaff.—p. 1882.
Endocrine Diseases in Practice. W. H. Veil.—p. 1884. C'cn.

Tubercle Bacillus Carriers.—Gutmann reports a number of cases in which acid-fast bacilli were found in the sputum without clear symptoms of tuberculosis. In some of these tuberculosis was diagnosed, but the condition turned out to be bronchiectasis or nontuberculous disease of the tonsils. In other cases the organisms were true tubercle bacilli. In one of the latter cases the woman in question had had tuberculosis fifteen years before. The temperature and blood sedimentation were normal, but the mucus coughed up in the morning contained acid-fast bacilli which were, undoubtedly, the cause of the tuberculous infection of the patient's 2 year old child. In another case tubercle bacilli were excreted in the urine during three months, two years after cure of a closed infraclavicular tuberculosis. Nine months after they ceased to be excreted, a beginning tuberculosis of the ureter and renal pelvis was demonstrated.

74: 1903-1944 (Nov. 11) 1927

*Etiology of Scarlet Fever. Mandelbaum.—p. 1903.
Action of Morphine on Bile Tract. W. Schöndube and O. Lürmann.—p. 1906.
*Radiant Energy and Lipoids. H. Much.—p. 1909.
Efficacy of Provocative Therapy in Gonorrhea. Siemens.—p. 1912.
Pathogenesis of Metasyphilitic Diseases. E. Witebsky.—p. 1914.
*Symptomatology and Treatment of Chronic Lethargic Encephalitis. E. Marx.—p. 1916.
Spontaneous Birth with Double Uterus and Septate Vagina. K. Grewing.—p. 1917.
Erroneous Estimation of Blood Grouping. B. Oelschlägel.—p. 1917.
Use of Motion Pictures in Training of School Physicians. E. Plate.—p. 1918.
"Vestibular" Death While Bathing. Güttich.—p. 1919.
Significance of Focal Infection from Standpoint of Internal Medicine. R. Schnitzer.—p. 1920.
Relation of Blood Groups to Disease. Merkel.—p. 1920.

Etiology of Scarlet Fever.—By means of a special culture medium, Mandelbaum is able to grow an organism that closely resembles the diphtheria bacillus in appearance, but not in culture. He uses the blood serum of cows that were pastured during the summer. This serum contains a yellow coloring, probably belonging to the carotin group, and containing many lipoids. Grown on this medium, pathogenic diphtheria bacilli form yellow colonies and the pseudodiphtheria bacilli, white colonies. When colonies of genuine diphtheria bacilli and of organisms from cases of scarlet fever —both being yellow in color—are grown for three or four days in the incubator or at room temperature or in the icebox, it is noted that the scarlet fever cultures contain large, shiny bodies, of disk, pretzel, biscuit and globular form, evidently myelin formations, while the pure diphtheria cultures do not show these formations. Experimental and clinical observations have convinced Mandelbaum that this myelin forming organism has something to do with the development of scarlet fever and that it occurs abundantly in certain cases of sore throat and especially in cases of bloody discharge from the nose without the usual symptomatology of scarlet fever. He regards these persons as being carriers. They convey scarlet fever without necessarily developing the disease themselves. The scarlet fever bacilli pave the way for subsequent infection with the streptococcus hemolyticus and the toxins of this organism cause the well known symptoms of scarlet fever.

Radiant Energy and Lipoids.—Much made experiments with growing plants exposed to sunlight under glass, under quartz and without screening. Some were sprayed with lecithin, some with peptone, some with cholesterol, some with mixtures of these, and some with water. The plants sprayed with peptone grew best; cholesterol invariably killed soon, lecithin a little later. Much sees an application of these observations to the treatment of tuberculosis, but further studies must be made before positive conclusions can be drawn. However, it may be stated now that some tuberculous patients are the victims of a disturbance of lecithin metabolism and others of cholesterol metabolism. The action of light also plays a rôle in overcoming these disturbances.

Symptomatology and Treatment of Chronic Lethargic Encephalitis.—Since 1920, Marx has treated these cases with intravenous injections of an aqueous solution of trypaflavine with good results on the mentality and physical well-being of the patient. Of forty cases so treated, only four showed no improvement whatever. These four were severe cases of parkinsonism. Fourteen patients were markedly improved; twenty-two, moderately.

Wiener klinische Wochenschrift, Vienna

40: 1373-1404 (Nov. 3) 1927

Present Status of Phagocyte Theory. R. Kraus.—p. 1373.
Agranulocytosis. J. Zikowsky.—p. 1376.
*Treatment of Spastic Pyloric Stenosis of Infancy. C. Foramitti.—p. 1380.
Clinical Significance of "Vagus Pressure." L. Braun and B. Samet.—p. 1382.
*Malaria Treatment of Gonorrhea. G. Scherber.—p. 1383.
*Autohemotherapy in Gonorrheal Epididymitis. M. Scharman.—p. 1384.
Torsion of Normal Adnexa in Enteroptosis. M. Köhler.—p. 1387.
Disposition as Factor in Industrial Dermatoses. A. Perutz.—p. 1388.
Simple Methods of Blood Examination. A. Hittmair.—p. 1391.
Some Psychotic Manifestations of Childhood. E. Lazar.—p. 1392.
Tubal Insufflation in Diagnosis and Therapy. E. Graff.—p. 1394.
Indications and Results of Radiotherapy in Gynecology. P. Werner. Supplement.—pp. 1-12.

Treatment of Spastic Pyloric Stenosis of Infancy.—The most useful surgical method, in Foramitti's opinion is that of Weber-Rammstedt: incision of the pylorus from without on the anterior wall of the pylorus in a longitudinal direction as far as the mucosa with the incision left open. He reports an operation on a child, aged 10 weeks. A very small incision was made and the pylorus was found to be swollen to the size of the thumb, pale in color and as hard as cartilage. The lumen would not admit the tip of the little finger. The anterior wall of the stomach was opened by an incision scarcely 1 cm. long. A slightly curved clamp was forced through the pylorus and slowly and carefully opened. Hegar's cervical dilators were then used until the pyloric ring was wide enough to admit number 14. The small gastrotomy wound was closed in three layers. After some hours a few spoonfuls of tea were given, and on the next day breast milk. Tears in the serosa occurred seven times in thirteen cases. They were sutured without difficulty. The method diminishes the risk of hemorrhage and of peritoneal infection.

Malaria Treatment of Gonorrhea.—Scherber used the malaria treatment of gonorrhea in two groups of patients, the first composed of those who had syphilis as well as gonorrhea, and the second of those with gonorrhea alone. The febrile process checks secretions and injures the gonococci in the tissues more or less extensively. In the majority of cases, malaria causes the subacute and chronic infiltration

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foci in the connective tissue to be absorbed, nevertheless, the authors had some complete failures. Malaria treatment does not effect an absolute cure, but is an auxiliary remedy. Of all fever treatments, however, the malaria cure is the most effective on the gonorrheal processes of the mucous membrane and of the connective tissue.

Autohemotherapy in Gonorrheal Epididymitis.—Autohemotherapy was used by Scharman in twenty-four cases of gonorrheal complications, among which epididymitis was prominent. The blood was taken from the ulnar vein and injected fresh and unaltered into the intramuscular tissue. The amount was gradually increased from 3 to 7 cc. From the results in his series of cases, the author concludes that autohemotherapy represents a suitable and successful treatment. Usually four injections were necessary for the production of a therapeutic result, so that after about ten days (the injections being given on alternating days), the patient was able to leave the hospital. Objectively and subjectively the injections were well borne. In fresh epididymitis (duration not more than a week), local reactions were observed, but these were avoided by giving the second injection on the third day after the first injection.

40: 1405-1436 (Nov. 10) 1927

*Disturbances of Water Metabolism. E. Kauf and E. Zak.—p. 1405.
Significance of Intracranial Lesions of the New-Born in Obstetrics. H. Heidler.—p. 1408.
Industrial and Alimentary Saturnism. H. Krasso.—p. 1413.
*Treatment of Gastric Ulcer. R. Willvonseder.—p. 1416.
Phagocytes; Macrophages and Reticulo-Endothelium. R. Kraus.—p. 1417.
Agranulocytosis. J. Zikowsky.—p. 1420.

Disturbances of Water Metabolism.—Variations in excretion of sweat were determined by Kauf and Zak in seventeen persons afflicted with cardiocirculatory disturbances. The most reliable index was obtained by making finger prints on an ashfree filter paper which had previously been moistened with a 10 per cent silver nitrate solution. On exposure to light, black dots appeared on the paper, each spot representing a secreting sweat gland. Sweat secretion was normal in only three cases, entirely absent in three cases and considerably diminished in eleven cases. In fifteen cases of valvular diseases of the heart, fully compensated, and without evidence of circulatory disturbances, the sweat secretion was normal. In twenty-seven decompensated cases, with enlarged liver, edema, insufficient diuresis, sweat secretion was either entirely absent or considerably diminished. Improvement, under treatment, was always accompanied by a corresponding increase in sweat secretion.

Treatment of Gastric Ulcer.—Willvonseder had good results from the use of bismuth preparations in the treatment of gastric ulcer and other gastric diseases accompanied by hypersecretion and increase of hydrochloric acid.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

92: 1-256 (Oct. 14) 1927

Cystitis Dissecans Gangraenescens (Stoeckel) Actinogenetica. H. Heidler.—p. 1.
New Hysteroscope; Its Use in Gynecology. F. von Mikulicz-Radecki and A. Freund.—p. 13.
Results of Irradiation of Pituitary Gland in Gynecologic Diseases. J. Sahler.—p. 25.
Artificial Production of Corpus Luteum by Injection of Placental Substance of Early Pregnancy. M. Murata and K. Adachi.—p. 45.
Fat Content of Corpus Luteum in Extra-Uterine and in Normal Pregnancy. T. Steinforth.—p. 71.
Lattice Fiber Structures in Human Placenta. O. Terasaki.—p. 94.
Cotyledon and Septa of Placenta. T. Antoine.—p. 110.
Gangrenous Ergotism. P. Caffier.—p. 116.
Reaction of Umbilical Cord to Irritation. R. Borodowitsch.—p. 173.
*Analysis of Blood and Urine for Acetone Bodies in Hyperemesis Gravidarum. O. Bokelmann and A. Bock.—p. 184.
*Severe Hyperemesis Gravidarum and Insulin. E. Lenz.—p. 198.
*Experience in Treatment of Eclampsia. H. F. Eberhard.—p. 204.

Analysis of Blood and Urine for Acetone Bodies in Hyperemesis Gravidarum.—A study of twenty-two cases of vomiting in pregnancy lead Bokelmann and Bock to the assertion that the gravity of the condition in the individual case may be judged from the acetone body content of the blood, alone or in association with that of the urine. An amount below 80 mg. per hundred cubic centimeters puts the case in the class of "physiologic" vomiting; more than 100 mg. per hundred cubic centimeters justifies the diagnosis of "emesis" gravidarum or relative inanition, while a concentration greater than 150 mg. per hundred cubic centimeters indicates "hyperemesis" or a severe form of inanition and more than 200 mg. is evidence of a malignant form of the disease. It is evident that the complete fast would be an erroneous form of treatment in cases with high concentration of acetone in the blood. Parenteral administration of carbohydrates should, instead, be promptly instituted. Light forms of pregnancy vomiting may be treated by cautious addition of carbohydrates to the diet. In patients with the pernicious form, there is a tendency, toward the end, toward restriction in the formation of acetone bodies. With a grave clinical condition, a low concentration of acetone bodies in the urine appears to be a bad prognostic sign and supports a decision to interrupt the pregnancy.

Severe Hyperemesis Gravidarum and Insulin.—Lenz reports success from the use of glucose and insulin in a case of grave hyperemesis with icterus, acetonuria and renal disturbances in the third month of pregnancy in a previously healthy young primigravida. The insulin was given in decreasing doses, beginning with 60 units a day. The glucose was given by the rectum.

Further Experiences in Treatment of Eclampsia.—Individualized treatment, beginning always conservatively with venesection, barbital injections and oxygen administration, is recommended by Eberhard. He reports on twenty-three cases from the provincial midwife's training school of Hanover, in the eighteen months ending May 15, 1927. There were two maternal and six infants deaths, including in the latter two which occurred before the mother reached the clinic. He lays great weight on watchfulness and nursing (free breathing, position on the side, glucose by the rectal drip method, oatmeal gruel by mouth as soon as possible, etc.). Of the eighteen cases in which the eclampsia appeared before delivery, cesarean section was performed in two.

Zentralblatt für Gynäkologie, Leipzig

51: 2841-2904 (Nov. 5) 1927

Diagnostic and Therapeutic Value of Douglas Puncture. B. Zondek and W. Knorr.—p. 2842.
Results of Radiotherapy of Cervical Carcinoma at the Charité. F. C. Wille.—p. 2849.
*Shape of Skull of the New-Born. H. Abels.—p. 2856.
*Case of Nevus Cancer of Vulva. J. Sahler.—p. 2859.
*Ovarian Pregnancy. H. Hellendall.—p. 2865.
*Influence of Irradiation of Ovaries on Mammary Gland in Guinea-Pigs. E. Homann.—p. 2868.
*Pregnancy and Cardiac Defects. I. Jakowleff.—p. 2870.

Shape of Skull of the New-Born as Influenced by Pelvic and Occipital Presentations.—The shape of the child's skull after birth with pelvic presentation is contrasted with that after birth with occipital presentation. With the former, the top of the skull, seen in profile, is horizontal; with the latter, the skull slants upward toward the back.

Nevus Cancer of the Vulva.—Two cases of cancer of the vulva—in a mother and daughter, aged 56 and 28, respectively—are reported by Sahler. In the daughter the neoplasm developed on the site of a wart excised two years previously. The tumor itself was not pigmented but the surrounding skin was melanotically discolored. The wart had been almost black in color, but had not been examined histologically. The tumor gave the impression of a pendulous fibroma. The tumor and adjacent structures were excised and about ten weeks later the patient died with symptoms of exudative pleuritis. Metastatic nodules, of various degrees of pigmentation, were found in large numbers in the brain, the pulmonary and parietal pleurae, the heart, parietal peritoneum, great omentum, ovaries, uterus, and thoracic vertebrae. In the mother the lesion took the form of a series of nodules, varying in size from a pea to a walnut, and resembling pointed condylomas. They were broad based and nowhere showed degeneration. They were situated in the region of the perineum and on the inner side of the labia majora. They had been noticed for a year. In the last few months they had grown rapidly and caused pain in standing and sitting. The involved structures were excised into healthy tissue and the patient is well one year later.

Ovarian Pregnancy.—Hellendall reports a case of ovarian pregnancy on the left side in a secundipara, aged 24. The year before she had had a curettage for miscarriage. Pain, bleeding, tender adnexal tumor and the presence of colostrum suggested extra-uterine pregnancy, and operation was done, with removal of the pregnant ovary. The embryo was 2.5 cm. long.

Influence of Irradiation of the Ovaries on the Mammary Gland in Guinea-Pigs.—Homann did not find that roentgen irradiation of the ovaries of guinea-pigs from two to four weeks old influenced the mammary glands to secrete milk. He applied from 10 to 12 Holzknecht units to the back and followed as closely as possible the technic of Steinach and Holzknecht (focal distance 25 cm., spark gap from 25 to 27 cm., current from 3 to 4 milliamperes, irradiation time from seven to eleven minutes).

Pregnancy and Cardiac Defects.—Patients with all varieties of valvular heart disease, even without compensation, are in general able to go through parturition, Jakowleff believes from the study of a large material, if the decompensation is not very pronounced or of long standing and if the delivery is conducted with all care. The combination of mitral stenosis and mitral insufficiency he considers the most dangerous. The mortality was from 25 to 27 per cent. With compensated mitral stenosis the outcome was favorable; the second stage of labor and the puerperal period were normal. Mitral insufficiency caused no serious difficulty, except where other disturbing factors were present. Myocarditis gave no cause for concern, if the compensatory work of the heart was satisfactory. If valvular disease is accompanied by symptoms of disease in other organs (nephritis or tuberculosis), pregnancy should be terminated. The same is true in cases in which compensation has only recently been reached, as in such cases it may at any moment be disturbed. Decompensation early in pregnancy and resistant to treatment necessitates the interruption of pregnancy.

51: 2905-2968 (Nov. 12) 1927

*Malignant Tumor of Kidney and Pregnancy. W. Stoeckel.—p. 2906.
Hydronephrosis of Dystopic Fused Kidney as Birth Hindrance. A. Idel.—p. 2913.
Ureterovesical Reflux After Corrosive Injury to Bladder. R. Andler.—p. 2921.
Injury to Bladder During Labor. B. Ottow.—p. 2924.
Fistula Between Bladder and Abdominal Wall with Necrosis of Pubic Bone Following Roentgen-Ray Burn. B. Ottow.—p. 2936.
Forceps Delivery After Goebell and Stoeckel's Operation for Urinary Incontinence, Without Injury to Bladder Function. A. Calmann.—p. 2943.
Cure of Urinary Incontinence by Vaginal Amputation of Corpus. M. Samuel.—p. 2944.
Surgical Treatment of Bladder Contracted from Trauma or Inflammation and of Congenital Malformations of Bladder. T. Naegeli.—p. 2946.
Enema Syringe Tip in Bladder. T. Johannsen.—p. 2949.
Apparatus for Collecting Urine in Young Children. G. Haselhorst.—p. 2950.

Malignant Renal Tumor (Osteo-Adeno-Papilloma Destruens) and Pregnancy.—Stoeckel reports the case of a woman, aged 33, near the end of pregnancy, with a huge abdominal tumor. Labor was induced a week before term and a healthy child was born. After a delay of five weeks, during which time fluid was several times withdrawn by puncture, a radical operation was done. The cystic tumor, which was four times the size of a uterus at the end of pregnancy, occupied the site of the right kidney, which was not found. It presented an adenomatous and papillomatous structure, with epithelium composed of cylindrical cells. Spongy bone tissue containing marrow was present. This had not formed on a basis of calcified connective tissue, but represented new bone formation from a tissue containing osteoblasts. There were definite evidences of malignancy. The patient recovered, and is well four years later.

Hospitalstidende, Copenhagen

70: 1035-1060 (Nov. 3) 1927

Artificial Sunlight Treatment of Tuberculosis in Upper Air Passages (Spectrum of Modified Carbon Arc Light). S. F. Nielsen.—p. 1035.
*Treatment of Uremia with Intravenous Infusion of Hypertonic Solution of Sodium Sulphate. K. O. Møller.—p. 1046.

Case of Uremia Treated with Intravenous Infusion of Hypertonic Sodium Sulphate Solution.—In Møller's patient, a man, aged 52, symptoms of uremia appeared suddenly, without preliminary signs of renal insufficiency. The intravenous injection of sodium sulphate in strongly hypertonic solution was immediately followed by remarkable improvement, which Møller ascribes directly to this treatment. He questions the effectiveness of the sodium sulphate infusion in uremia following long-continued renal insufficiency.

Hygiea, Stockholm

89: 865-912 (Nov. 30) 1927

Specific Adsorption Therapy. H. Bechhold.—p. 865.
*Significance of Fahraeus' Reaction in Clinical Medicine. F. Lindstedt.—p. 876.

Significance of Fahraeus' Reaction in Clinical Medicine.—Lindstedt used Fahraeus' reaction (Westergren) about 12,000 times in more than 4,000 patients. In pulmonary tuberculosis his results, in the main, confirm both the increase of sedimentation speed in proportion to the extent of the tuberculous process and the slight direct diagnostic value of the reaction in early tuberculosis. He found normal sedimentation values a fairly reliable sign of an arrested or chronic process; increased values, of activity. He particularly emphasizes that normal sedimentation is an insufficient basis for a good prognosis. In pulmonary tuberculosis of phthisic form high sedimentation values point with considerable probability to an unfavorable prognosis, but with central or "epituberculous" changes in the lungs and especially in exudative pleurisy and erythema nodosum, the sedimentation is usually high, notwithstanding the comparatively favorable prognosis. There were some long-continued cases of centrally located lung diseases in which the persisting pathologic sedimentation represented the only certain objective symptom. In acute polyarthritis, the sedimentation reaction and the dissociation between sedimentation and fever were particularly evident and highly significant, even in the second week. The retarding influence on sedimentation of icteric, cyanotic, and anaphylactic conditions was definitely confirmed. The results in sixty-eight cases of exudative pleurisy, twenty-four of erythema nodosum, and fifty-four of acute polyarthritis are presented in detail.

Ugeskrift for Læger, Copenhagen

89: 1069-1086 (Nov. 24) 1927

*Prescorbutic Myopathy Simulating "Growing Pains" in Run-About Children. C. Friderichsen.—p. 1069.
Treatment of Typhoid and Paratyphoid with Staphylococcus Vaccine. V. Bie.—p. 1072.

Prescorbutic Myopathy Simulating "Growing Pains" in Run-About Children.—Friderichsen asserts that the localization of the pathologic phenomena in scurvy varies according to the function most important for the particular age; in infants the dominating symptoms are in the long bones; in run-about and school children, in the large muscles, while in the elderly, extensive skin hemorrhages predominate. Four cases in young children are cited in which "growing pains" and muscular weakness represented the first symptoms of a prescorbutic myopathy. Atrophy of the muscle cells at an early stage of this disorder was demonstrated by Højer. Of thirty children, from 6 months to 3 years old, with infantile scurvy, ten showed no roentgenologic changes in epiphyses or diaphyses; twenty-three, no periosteal changes, although swelling and pain were considerable. Latent scurvy may become manifest after infections. He mentions the possibility that lack of appetite and weakness in run-about and school children may be due to overcooked food.

CORRECTION

Klinische Wochenschrift.—The last articles in the index of the *Klinische Wochenschrift* of Oct. 29, 1927, published in THE JOURNAL, January 28, page 335, should have read:

Tetaniform Spasms During Synthalin Treatment. G. Perémy.—p. 2100.
Origin, Growth and Healing of Cholesteatoma. A. Lautenschläger.—p. 2101.
Muscle Activity and Size of Heart. H. Herxheimer. Sport Supplement.—p. 21.
Reply. H. Rautmann. Sport Supplement.—p. 23.

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